MANUFACTURERS RECORD

One Big Family

A truly democratic government should be the understanding father of all of its citizens. It should be their friend.

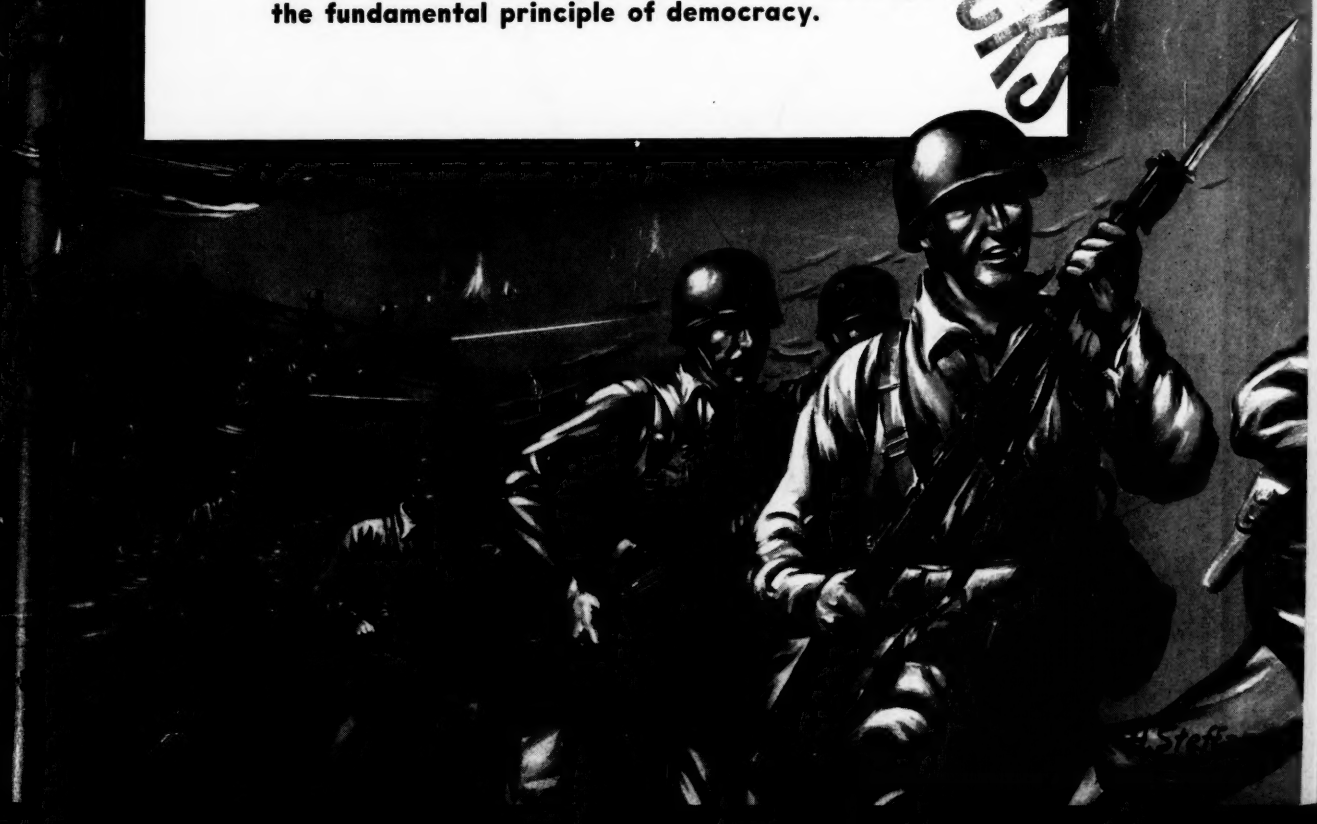
It should treat its citizens with the confidence that exists between friends.

It should treat them not only as friends, but as associates, all of whom have a single objective.

It should treat them impartially as members of one big family.

To treat them in any other way creates confusion and strife among the citizens and destroys the fundamental principle of democracy.

STACKS



Eliminate Slip!

PUT TEETH INTO YOUR DRIVES

There's IMMEDIATE ECONOMY *in This Positive Drive!*

● How do you base your decision on selecting drives, today? First cost? Long run costs?

Because a Link-Belt Silverstreak Silent Chain Drive displays every visual evidence of quality, precision and durability, you may feel that it is more costly. Actually in many cases, even the first cost of a Silverstreak silent chain is less than any other type of drive. This is particularly true in the larger horsepower sizes. And the saving in overall costs, in the year-by-year maintenance charges, begins with the first revolution of the pinion! Link-Belt Silverstreak silent chain drives effect substantial savings — in operating the driven machine at its rated capacity . . . delivering every r.p.m. of the motor . . . tooth-to-tooth contact makes slip impossible. They maintain their positive efficiency throughout the life of the drive, which may be 20 or 30 years! Their upkeep requirements are practically nothing beyond an occasional change of oil!

From the first to last, Link-Belt Silverstreak silent chain drives are outstanding for *Economy* as they are for Efficiency! Send for Silent Chain Data Book No. 125.

**In cooperation with the government conservation program, Silverstreak silent chain will hereafter be furnished in a durable "blackout" finish.*

LINK-BELT COMPANY

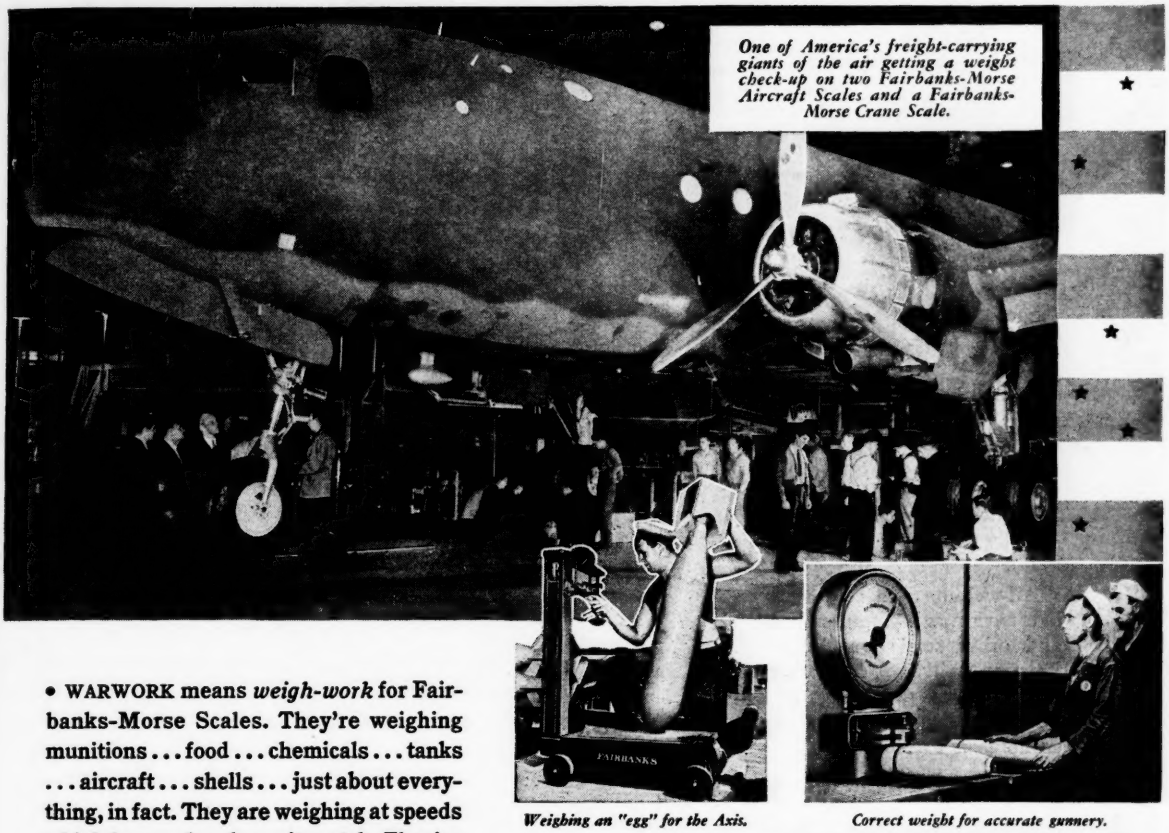
Indianapolis 6, Chicago 9, Philadelphia 40, Atlanta, Minneapolis 5, Dallas 1, San Francisco 24, Toronto 8, Baltimore 15, Washington 5, D. C.

Offices, warehouses and distributors in principal cities

9305

LINK-BELT
Silverstreak
SILENT CHAIN DRIVE

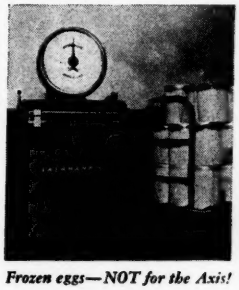
Fairbanks-Morse Scales in Warwork



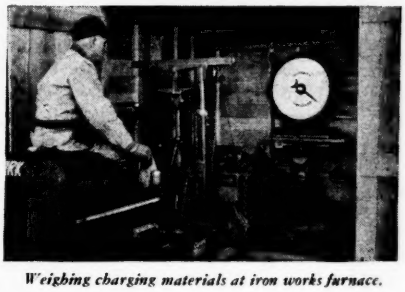
One of America's freight-carrying giants of the air getting a weight check-up on two Fairbanks-Morse Aircraft Scales and a Fairbanks-Morse Crane Scale.

Weighing an "egg" for the Axis.

Correct weight for accurate gunnery.



Frozen eggs—NOT for the Axis!



Weighing charging materials at iron works furnace.

• WARWORK means *weigh-work* for Fairbanks-Morse Scales. They're weighing munitions . . . food . . . chemicals . . . tanks . . . aircraft . . . shells . . . just about everything, in fact. They are weighing at speeds which human hands can't match. They're weighing with accuracy that human eyes can't equal. They're working in endless shifts that human stamina can't endure. They're helping to speed up America's war effort on the production front, for Fairbanks-Morse Scales are "at home" on the production front, in peace or in war. Fairbanks, Morse & Co., Fairbanks-Morse Building, Chicago, Illinois.

★ ★ ★

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DIESEL ENGINES · WATER SYSTEMS
PUMPS · SCALES
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RAILROAD EQUIPMENT

Scales

BUY WAR BONDS

MANUFACTURERS RECORD

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FEATURE ARTICLES

DEPARTMENTS

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Little Grains of Sand

"Little drops of water, little grains of sand,
Make the mighty ocean, and the pleasant land."

Most people are careless in their thinking. So far as they are concerned, it is all right to tax the other fellow, just so long as he is the other fellow. Income taxes, excess profits taxes, and other taxing plans can be so shifted about as to make it appear that the other fellow is paying the tax. This is not true of a sales tax. Everybody who buys must pay it and the burden rests squarely upon each individual. It is impossible to evade a sales tax, and for that reason our politicians are loath to even consider it.

Sixty-six hours a week is a right long work-week, but if reports are true that is what the Russian worker is doing to supply the necessities of a war they recognize is a life or death struggle. The United States is in just as serious a war. It face enemies all over the world. Fortunately it does not face them on its own soil. It is disheartening to think of Americans bickering with each other and talking about their own selfish interests when their sons and their neighbors' sons are being killed in their defense.

"Social Security" and "A Wage and Hour Law" are only possible because of the sacrifice that the fighting man is now making. Compare the forty-hour work-week in the United States with the sixty-six hour work-week in Russia, or for that matter with the seventy-two hour work-week that many of us still remember right here in America. Compare absenteeism in the United States with absenteeism in Russia. Compare the daily life of the privileged workman with that of the disciplined soldier.

A real man, in any walk of life, is expected to have a conscience.

Who is the forgotten man? He is the fellow who thinks for himself, makes his own decisions, and then votes by himself. He is the fellow who recognizes the fact that by so doing he is performing his civic duty. He does not control other votes because he recognizes the fact that every man is entitled to his own opinion and should be governed by his own convictions.

He is the forgotten man because he can not be herded into a gang by a political or labor leader. There are millions of forgotten men.

There was a threatened shortage of paper two years ago. The shortage turned into an abundance within several months. There is a threatened shortage of paper now. Magazine and newspaper publishers are issued directives from Washington restricting the amount of paper that they may use. Paper mills

are told the grade and weights of paper that they may make.

These directives do not affect the all-powerful director. The amount of printed matter originating in Washington that passes over an editor's desk in the course of a day is unbelievable if it is not actually seen. At least ninety-nine per cent of it reaches the waste basket. There are three near this desk. Fortunately we have baling machines, and the paper mills can re-convert it. Business and free press are restricted by government "Ukase" while the weeds of propaganda are not only permitted, but encouraged, to grow in a garden that badly needs plowing.

Why not make a long time economic plan for the U. S. before we try to plan for others whose problems differ from ours?

Charity begins at home and so do sound economic and social ideas.

A real executive well known to us has a wonderful definition of that much misused word "executive." According to him an executive is a man who has the ability to select associates to do what he has not time to do, what he does not want to do and what he can not do.

Is illness the main cause of absenteeism in industry or is illness just the best excuse? In the armed services absenteeism is cured by Epsom salts, C.C. pills or castor oil.

It has been revealed by the Food Administrator, testifying before a Congressional Committee, that Federal officials permitted 475 carloads (21,375,000 lbs.) of potatoes to be spoiled. While American housewives were finding it difficult to purchase them on the market, millions of pounds of potatoes were rotting on railroad sidings throughout the country.

Do you remember playing games with your little son or grandson? Do you remember his attempts to change the rules whenever he was getting licked? Do you remember how, in order to humor the child and to give him a chance to win, you agreed to the changes in the rules of the game?

And after the game was over you admitted to yourself that you had made a mistake. For the sake of the child's character you should have held him strictly to the letter and spirit of the rules because someday he will be a man.

Every patriotic American business man wants to see his country strong in peace, strong in war, but above all else he wants to see it strong in the hearts of his countrymen. This can not be accomplished if the "rules of the game," as the child sees them, the laws of the land as the mature mind sees them, are subject to change by childish whim.

THE FUTURE?

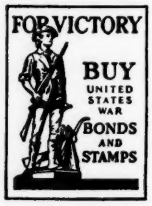
Let Us Face It UNAFRAID!

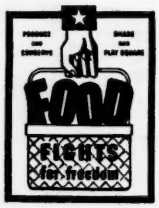
FOR three hundred years our forefathers faced the future with courage and stout hearts, with fortitude and the wisdom born of trying times. They bequeathed us the ways, means and ability to accomplish the impossible during the past two years.

Throughout our history there has always been a very vocal minority crying aloud that America has already passed her zenith, only to have ever greater achievements repudiate their dire prophecies.

How dark were the days of Valley Forge . . . and how wonderful the years which followed! To have less faith and fortitude and wisdom than did our forefathers is to spiritually desert our children and their children's children in these trying times.

We believe that the American people of today will fully measure up to the heritage our forefathers bequeathed us. Our belief in the American people is so strong that we are now making plans for the investment of substantial sums of private capital to provide ever-increasing opportunities for gainful employment in the development of those great natural resources of Florida —fertile soil, adequate rainfall and plenteous sunshine.

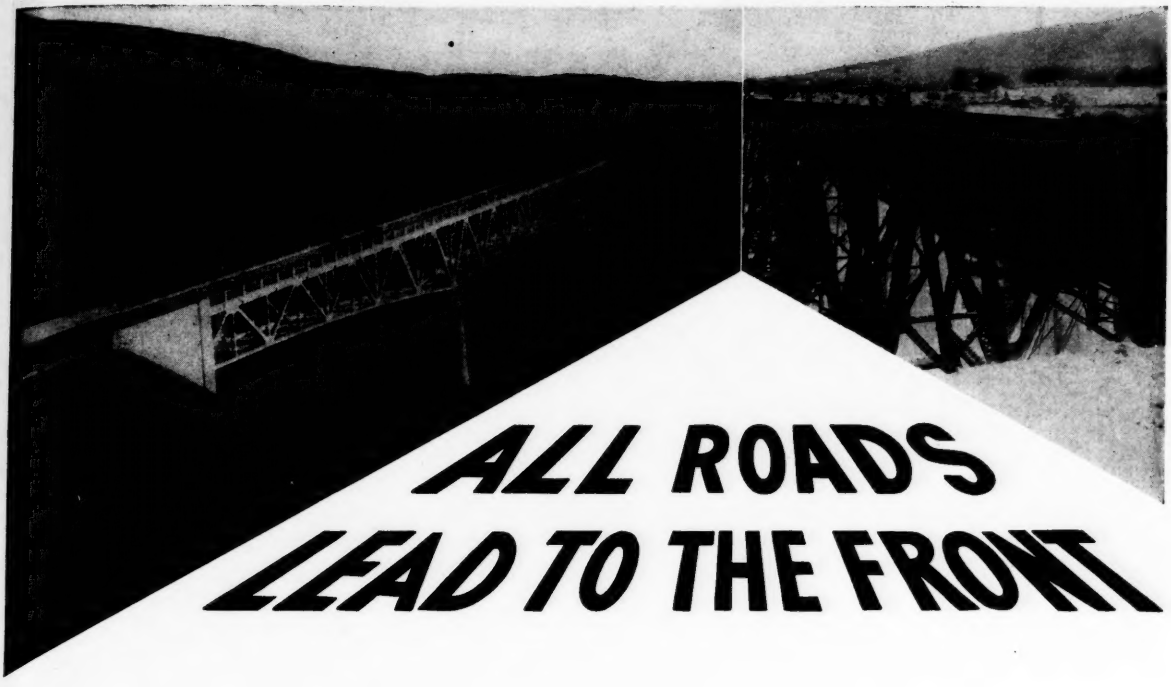




UNITED STATES SUGAR

CORPORATION

CLEWISTON, FLORIDA



ALL ROADS LEAD TO THE FRONT

HOWEVER PEACEFUL in appearance, it must be remembered that today all roads lead to the fighting fronts of the world. Over the railways and highways of America is flowing in tremendous volume the life-blood of the United Nations' war strength—in troops, equipment, food and all the materials essential to victory.

How fortunate that long-range planning and a far-sighted engineering program during peace prepared so many of these roads for today's terrible emergency. This, together with hard work and efficient coordination of operations by management, has made possible the amazing performance of our railroads in carrying passenger and freight traffic nearly double that of pre-war days.

An important feature in the war-time usefulness of these roads are the modern steel bridges, of every type and design, which carry them clear of delaying barriers. VIRGINIA BRIDGE is glad to have had such a large part in the building of these structures, and we look forward to the time of peace when all our resources can again serve roads that lead not to battle fronts.

Virginia Bridge Company

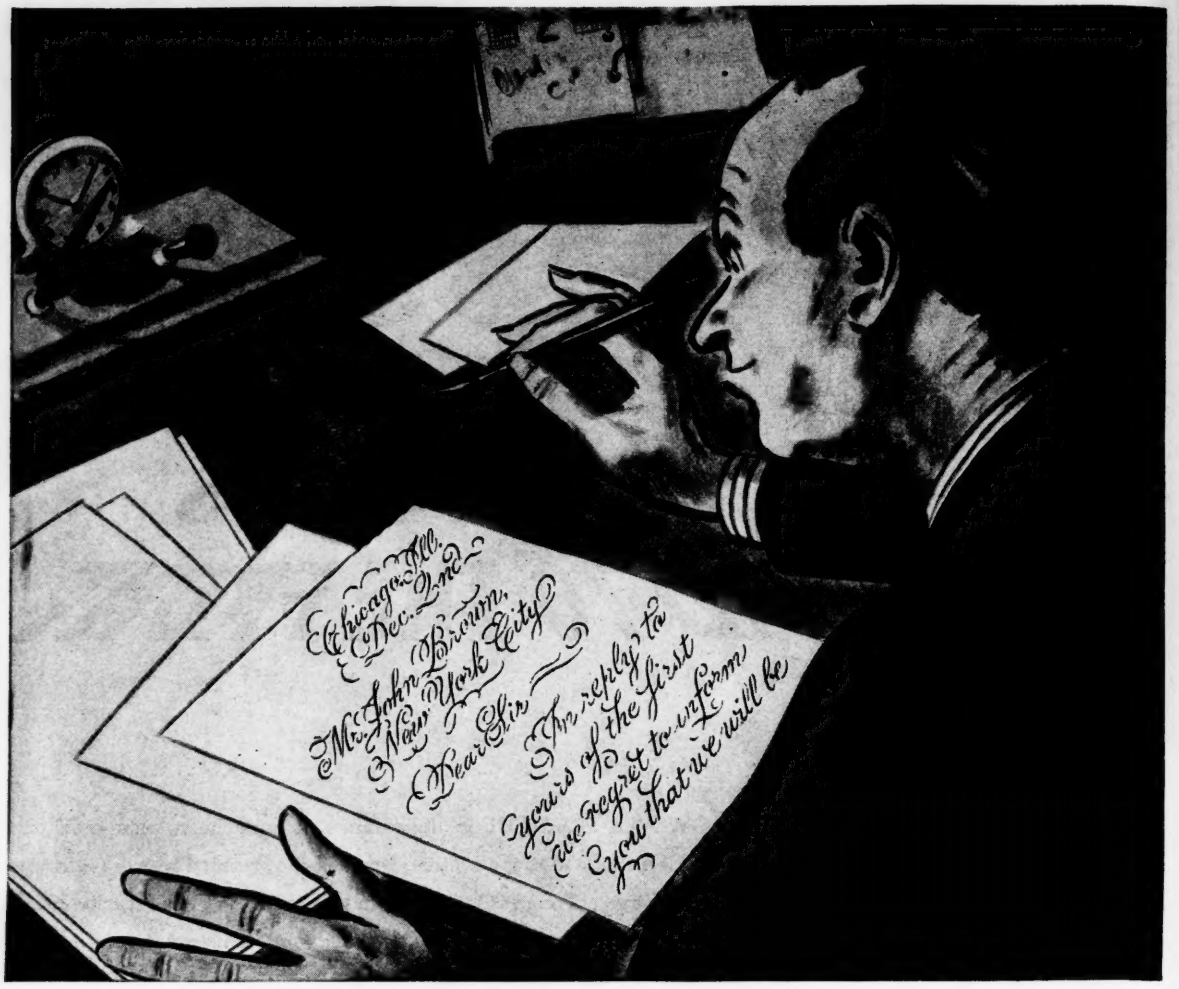
(South's Largest Structural Steel Fabricator)

STEEL STRUCTURES
All Types

Plants: ROANOKE, VIRGINIA
BIRMINGHAM, ALABAMA
MEMPHIS, TENNESSEE

ROANOKE BIRMINGHAM ATLANTA MEMPHIS NEW YORK DALLAS

UNITED STATES STEEL



NICE WORK—*but try to get it!*

"He writes a beautiful hand" was high praise for an office employee of the '90s.

But there's no big market today for those elegant flourishes, those delicately shaded lines. They take too long to do.

Modern business demands speed in all its operations. Often, such speed can only be achieved through swift, *repetitive* action—processes that are performed over and over again, quickly and accurately. That's especially true of business records—orders, invoices, shipping forms and the like.

For many years now, Uarco has been helping to speed plant and office routine with better record forms—both autographic register and typewritten. Designed for every department of business and industry, these record forms help to simplify the most complicated operations . . . achieving savings of time and effort which often appear incredible.

Whatever your particular record problem, chances are that Uarco has a solution, or can devise one. It costs nothing to consult with a Uarco representative.

UNITED AUTOGRAPHIC REGISTER COMPANY
Chicago, Cleveland, Oakland • *Offices in All Principal Cities*

"Getting Down to Brass Tacks"

All of our lives we've heard the expression, "getting down to brass tacks". To Milady of another day it meant that the storekeeper "got down" to a row of brass tacks and painstakingly, accurately measured the yards of "finery". Today, we "get down to brass tacks" for the unquestionable truth.

When a treacherous enemy struck at America, the nation demanded two absolute essentials — adequate mass transportation and power to run the furnaces of war.

Getting down to the brass tacks of transportation, meant the railroads. Military authorities and industry did not have to wait for them to get ready. They *were* ready.

Getting down to the brass tacks of power, meant bituminous coal — this nation's greatest source of power. Since Pearl Harbor, coal has furnished more power to run more industries that have produced more and better weapons of war than all the enemy nations.

Railroad transportation is essential transportation. Bituminous coal is essential power. Both are vital to Victory. And when Victory is won, and America gets down to the brass tacks of peace, the proven and unbeatable combination of railroads and coal, will be in the front ranks of progress, contributing their full share to the continued development of the nation.

The Norfolk and Western Railway, one of the country's great coal carriers, is proud to be a part of this great combination that is working for Victory and a better world for all mankind.

NORFOLK AND WESTERN RAILWAY

ONE OF AMERICA'S RAILROADS... *All* UNITED FOR VICTORY!

BUY MORE WAR BONDS

You BE THE JUDGE of this better A.C. welder

There *is* a difference in A.C. Welding — a big difference! You can quickly prove it to yourself with these improved machines produced by one of America's largest builders — and *users* — of arc welding equipment.

New Refinements

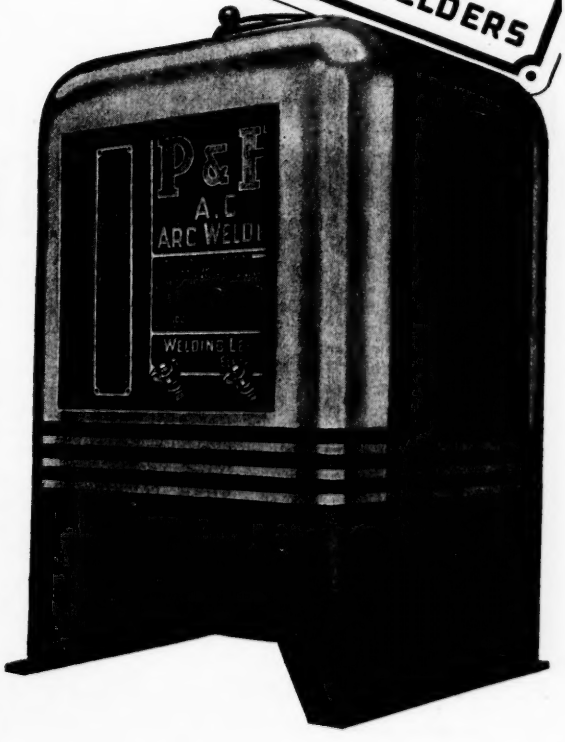
Here's the last word in simple, advanced design — all of the refinements you waited for — to help you weld faster, better, at a lower cost. Single, stepless heat control; creep-proof! An arc that's easier to control — that makes it easier to get uniform high quality welds. Higher operating efficiency — with no skimping on quality materials—saves on electrode and power costs.

WSR Rating Specify Usable Current

Every machine is rated on its WSR (Welding Service Range) which clearly specifies the *usable* welding current from minimum to maximum capacity. Models up to 1200 amperes.

Let modern A.C. welding help you speed up war production now — and cut costs afterward. See your P&H representative, or write us direct for complete information.

General Offices: 4427 W. National Ave., Milwaukee 14, Wisconsin



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CORPORATION
ARC WELDERS • EXCAVATORS • ELECTRIC CRANES P&H MOTORS • HOISTS • WELDING ELECTRODES

★ CHRYSLER AIRTEMP AT WAR ★

RADIAL COMPRESSOR

From tiny, fractional horsepower to big 75 horsepower units, Chrysler Airtemp Radial Compressors are performing a major war job on both the production and battle fronts.

The science of air control is built around the compressor. Chrysler Airtemp's *exclusive* Variable Capacity Radial Compressor provides a new efficiency and accuracy in indoor climate regulation. The radial cylinders cut in or out automatically, one at a time, to meet varying load requirements. This flexibility eliminates the peaks and valleys resulting from abrupt starting and stopping of ordinary compressors . . . holds temperature and humidity at a constant level.

Years spent in building delicate mechanisms, have developed high-precision, versatile skills at Airtemp, now devoted to war production. Backed by Chrysler Corporation research and engineering, when peace comes, these skills will again create heating, cooling and refrigeration units for homes and commercial use that will set new, high standards of efficiency and performance.

The lessons learned during peace in free competitive enterprise—freedom of the individual to produce and compete—today bring strength to a nation at war.

War Products of Chrysler Corporation

Tanks • Tank Engines • Navy Anti-Aircraft Guns • Army Anti-Aircraft Guns • Bomber Fuselage Sections • Bomber Wings • Bomb Racks • Bomb Shackles • Fighter Landing Gears • Aluminum Alloy Forgings • Aluminum Alloy Castings • High-Powered Aircraft Engines • Cycleweld Cement • Wide Variety of Ammunition • Anti-Tank Vehicles • Command Reconnaissance Cars • Troop and Cargo Motor Transports • Ambulances • Weapons Carriers • Gyro-Compasses • Navy Pontoons • Marine Tractors • Harbor Tugs • Marine and Industrial Engines • Smoke Screen Generators • Air Raid Sirens and Fire Fighting Equipment • Powdered Metal Parts • Cantonment Furnaces • Tent Heaters • Refrigeration Compressors • Field Kitchens • and Other Important War Equipment

Tune in Major Bowes every Thursday, C B S, 9 P. M., E. W. T.

Chrysler Corporation

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BACK THE ATTACK—BUY WAR BONDS

We Manufacture Factories

From flow sheet to finished product, our experienced Engineers and Builders produce complete plants—with all facilities and process equipment installed—tested—ready to run.

We use modern management, planning and production methods to meet your step-by-step approval.

Our integrated organization combines your wide experience with ours to alter—add to—reconvert—or build new plants.

We work for you with one organization—one contract—one responsibility—one profit. Preliminary suggestions and estimates for your 1944 budgets are readily available on request.

The H.K. Ferguson Co.

ENGINEERS AND BUILDERS

CLEVELAND • NEW YORK

"Let's keep working to win..."

You are probably busier than ever, and so are we, while

PACKAGING FOR VICTORY

Ammunition — food — medical supplies and clothing to *keep 'em in action* are "Packaged for Victory" in Apaco Corrugated Shipping Cases and Paperboard Folding Cartons.

On every front, under the most abusive extremes of moisture, heat and cold, Apaco containers are protecting and delivering vital supplies . . . ready for use whenever and wherever they are needed.

Apaco's "Packaging for Victory" fights on the home front, too! Our containers are releasing many metals and woods for other vital uses.

If you have to wait for your Apaco containers, remember we're making them as fast as possible. After Victory all our facilities will be at your command!

- CORRUGATED SHIPPING CASES
- BELSINGER TEXTILE SHIPPING CASES
- FOLDING CARTONS
- GARMENT BAGS
- GROCERY BAGS
- FIBER DRUMS
- TEXTILE PACKAGING SPECIALTIES

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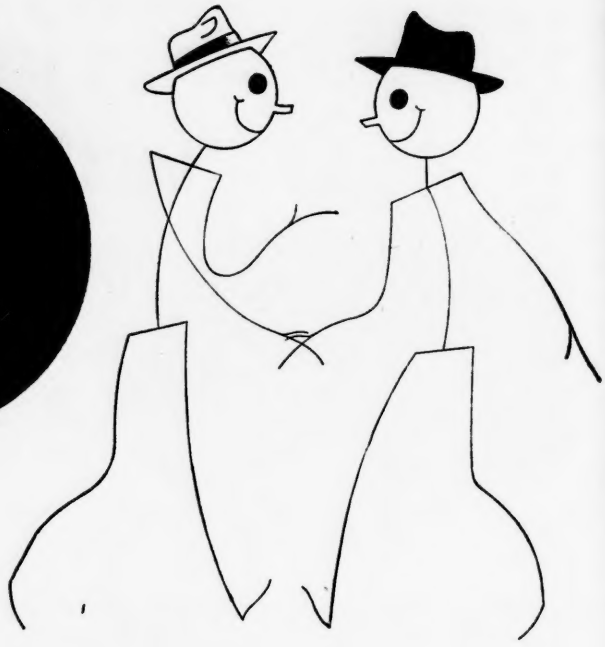
Apaco Established 1868

ATLANTA PAPER CO.
ATLANTA, GA.

Manufacturers of CORRUGATED CONTAINERS · FOLDING CARTONS · PAPER BAGS · PAPER PRODUCTS

WE HAVE
THIS TO SAY ABOUT
Magnesium



If the picture looks as if we were shaking hands with ourself—well, we are.

We do not make the metal magnesium but we *are* the largest fabricator of magnesium. We make the castings, tubing, sheet and other commercial forms needed by industry. We know magnesium, as few companies do. We believe in its future, fervently.

Magnesium and aluminum have much in common. They are both flightweight. Each is the other's best friend as an alloy. Each has become much better known to a large number of people who have recently learned to design and fabricate it. On many jobs they could be interchangeable, if lightness and strength were all that mattered.

But they also have major differences. One, specifically, is their economics.

Even the most similar materials usually have important cost dissimilarities. This is a fundamental to study thoroughly when imagineering postwar job-making products.

At this moment, ingot magnesium is actually cheaper than ingot aluminum, *per cubic inch*. This fact has caused much loose thinking about the use of magnesium. Actually, most fabricating costs on magnesium are so much higher that the commercial forms used by industry will in general continue to be considerably higher in price *per part*.

With both aluminum and magnesium totally drafted, they are now specified with regard chiefly to their relative weight. Between the two, the peacetime choice, however, will usually be determined by the question—how much can we afford to pay to save a pound of weight?

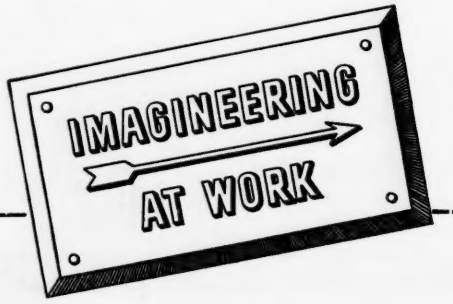
There is always a right answer to that question—as between aluminum and magnesium.

Costs must be as clear—and accurate—in the minds of Imagineers as any physical, chemical or electric characteristic, if Imagineering is really to pay off in terms of sustained postwar employment.

Because—if a lot of people are to be employed making a lot of new things—these things must be priced within the buying power of a lot of customers.

War-born economies of *both* aluminum and magnesium do promise lower costs for making things light.

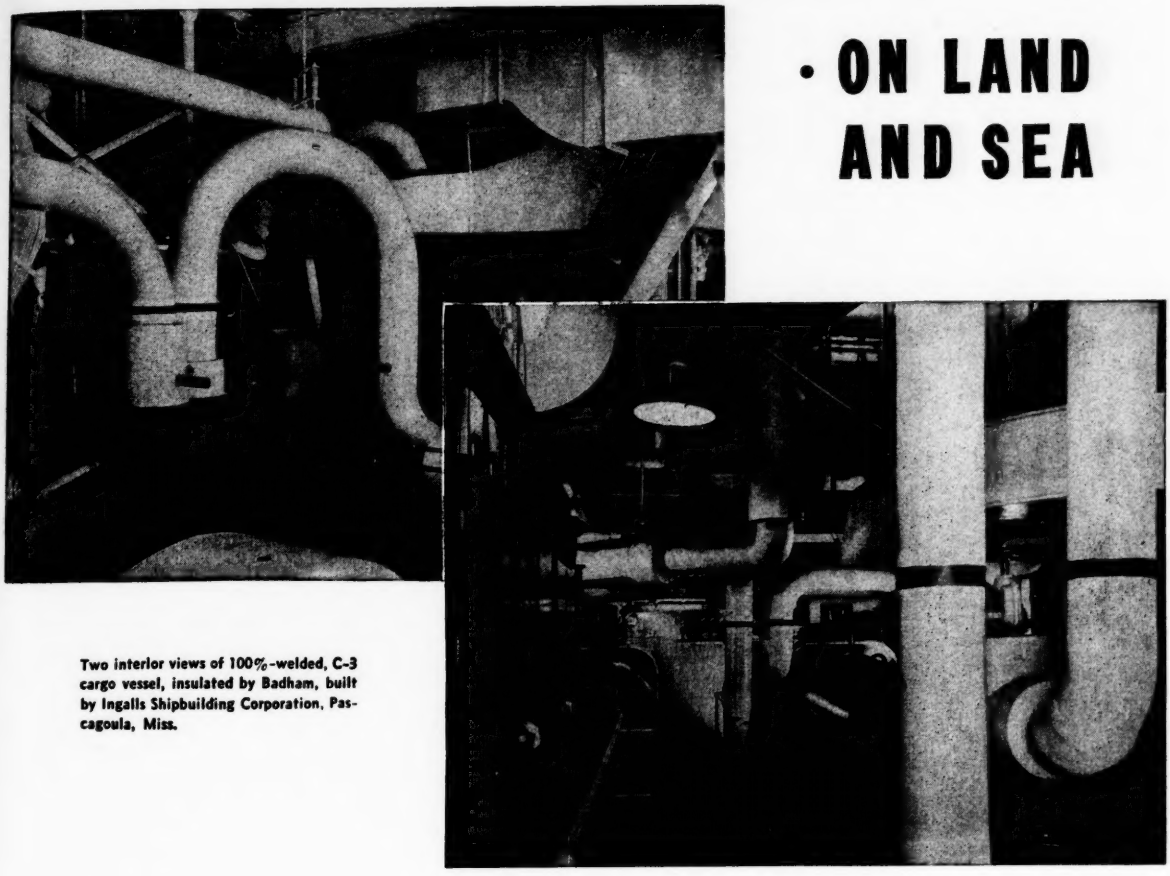
ALUMINUM COMPANY OF AMERICA, 2109 Gulf Building, Pittsburgh, Pennsylvania.



Alcoa Aluminum

INSULATION FOR EFFICIENCY

• ON LAND AND SEA



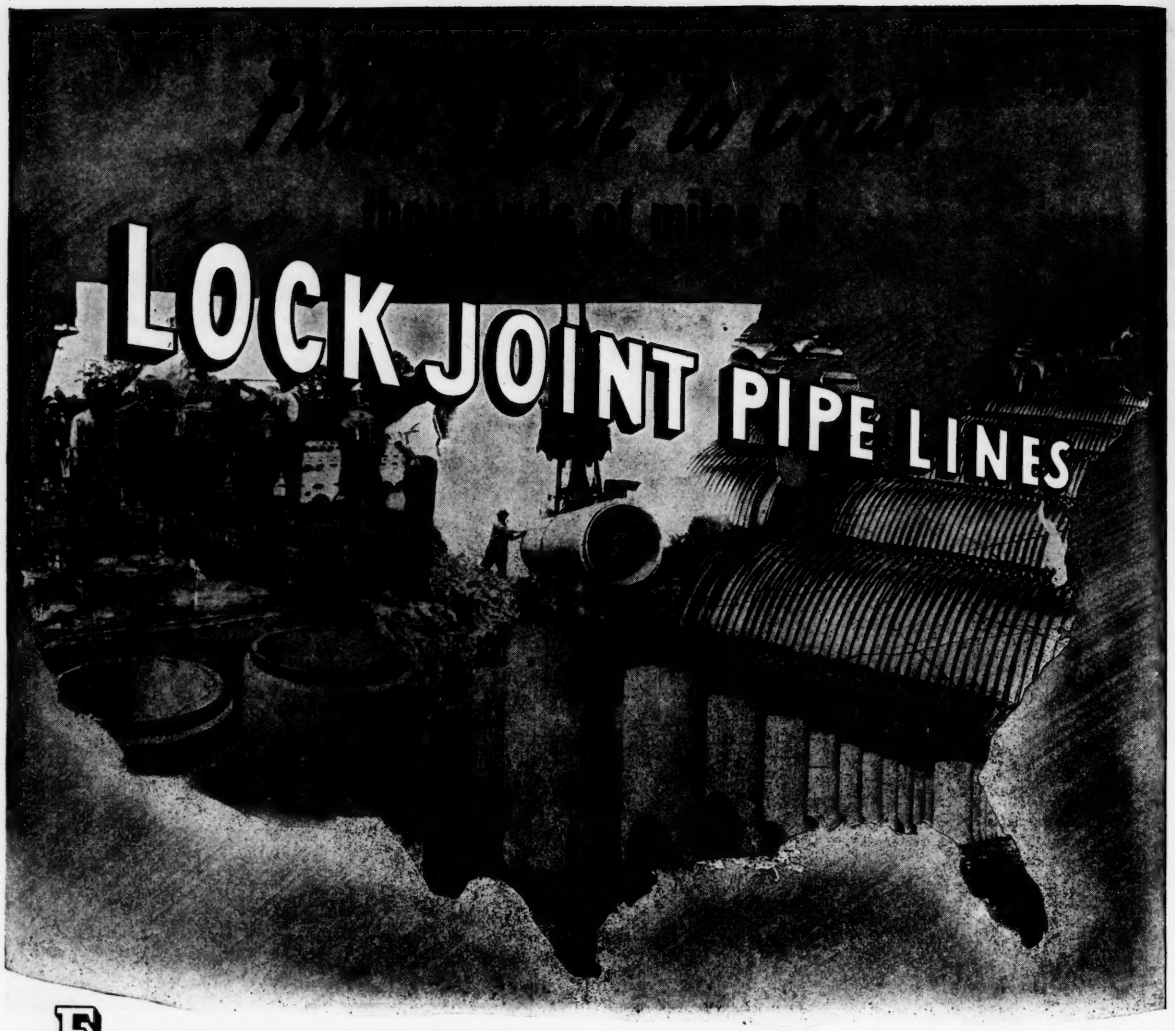
Two interior views of 100%-welded, C-3 cargo vessel, insulated by Badham, built by Ingalls Shipbuilding Corporation, Pascagoula, Miss.

Ships must have efficient insulation. Industrial plants, office buildings, institutions and dwellings need it too, and for the same reasons—to make full use of every pound of fuel, and to improve living and working conditions by creation of a constant, healthful temperature.

Your present and post-war insulation requirements can be fully served by Badham designing, engineering and manufacturing facilities. And you can expect the same sharp increase in efficiency of manpower and fuels that always accompanies Badham installations . . . on land, in home and factories . . . at sea, in warships, Liberty ships, C-3 cargo vessels and tankers. We invite inquiries on every type of insulation need.

BADHAM
INSULATION
COMPANY
BIRMINGHAM, ALABAMA

MANUFACTURERS OF **BADHAM** PIPE COVERINGS



From Portland, Maine to Oakland, California, Lock Joint Concrete Pressure Pipelines have created new high standards for water supply mains for the past 3 decades.

Leading water works engineers are definitely agreed that these highly efficient pipelines can absolutely be depended upon for strength, easy installation, adaptability, safety, high carrying capacity, water-tightness, long life and economical service.

In peacetime Lock Joint Pipelines are built with an eye to long-range programs and are recognized as the best method of constructing large diameter, high pressure water supply mains. In wartime, they offer a 25% to 75% saving of critical materials on 100% critical jobs.

The history of our many installations is the best proof of the lasting qualities built into every mile of Lock Joint Reinforced Concrete Pressure Pipe.

◆ ◆ ◆ ◆

Whether your project is large or small, for the present or the future, your 'phone call, telegram, cable or letter to any of our offices will bring a prompt reply.

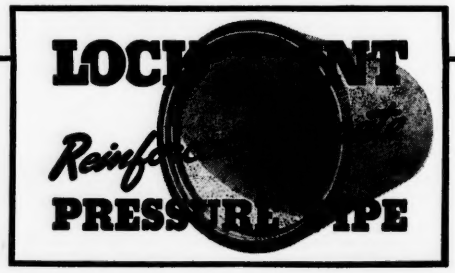
LOCK JOINT PIPE COMPANY

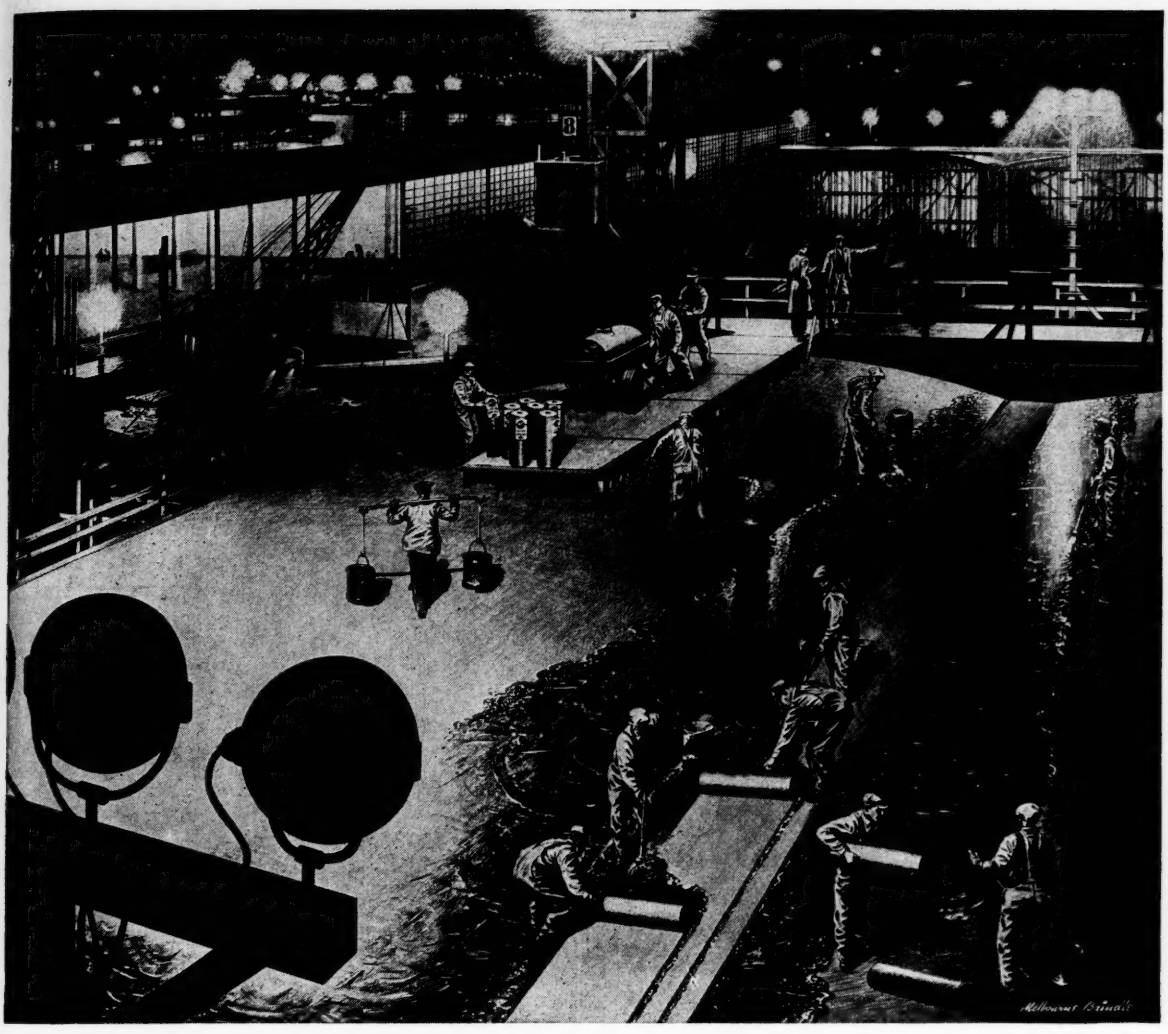
Established 1905

AMPERE, NEW JERSEY

Denver, Colo. · Chicago, Ill. · Kenilworth, N. J. · Kansas City, Mo. · Rock Island, Ill. White Plains, N. Y. · Valley Park, Mo. · Cleveland, Ohio · Hartford, Conn. · Navarre, Ohio

SCOPE OF SERVICES *Lock Joint Pipe Company specializes in the manufacture and installation of Reinforced Concrete Pressure Pipe for Water Supply Mains as well as Concrete Pipe of all types for Sanitary Sewers, Storm Drains, Culverts and Subaqueous lines.*





The under-cover story of America's war production

● They moved in at night—one of the fastest, most efficient mechanized forces the world has ever seen . . . Exactly 241 days later they moved out, and behind them, where a prairie had been before, was one of the greatest industrial units in the world—under the cover of a single roof.

Our part in the story of the building of America's vast production facilities includes the Barrett Roofs which today protect scores of wartime giants built for the Army and the Navy, for Ford, Curtiss-Wright, Glenn L. Martin, North American Aviation, United Aircraft and many others.

This tremendous record of current achievement, added to years of past experience, is of immediate and practical importance to all maintenance engineers. Barrett Pitch and Felt are non-critical and are available now for your roofing, reroofing and roof-maintenance needs and your local Barrett Approved Roofer is ready to help you.

He will make periodic inspections to check all roof conditions—a preventive against trouble and possible work interruptions. When repairs are required, he has trained men who will promptly remedy the situation — obviating any disturbance of plant service or personnel. If quarters are to be expanded or new buildings erected, roofing with Barrett coal-tar pitch and felt will provide the ideal solution.

Get in touch with our nearest district office or call on the Barrett Approved Roofer. He'll be glad to cooperate with you, take the "under-cover" work off your mind for the duration and for years to come.

THE BARRETT DIVISION
ALLIED CHEMICAL & DYE CORPORATION
40 Rector Street, New York 6, N. Y.
2800 So. Sacramento Avenue, Chicago 23, Ill.
Birmingham, Alabama

Barrett

Barrett Specification* Roofs . . . Barrett Built-Up Roofs and Waterproofings . . . Shingles and Sidings . . . Roll Roofings . . . Rock Wool Insulation . . . Roof Coatings and Protective Products

*Trade-Mark Reg. U. S. Pat. Off.

. . . and drive even harder on the pay-roll savings plan!"

Make War Bonds the Christmas Order of the Day. Urge your workers to make their personal Christmas gifts in the form of War Bonds—and practice what you preach! Make this a 100% War Bond Christmas—to insure future Yuletides of peace and prosperity.

Make up your own posters to spread the "War Bonds for Christmas" story across your plant. Tell the story again and again on bulletin boards, in your plant magazine, and on pay envelope stuffers.

But don't forget your basic, all-important Pay-Roll Savings Plan. How's it going, these days? Perhaps it needs a bit of stoking-up right this very minute, to hold its full head of steam against the competitive demands of the holiday season.

Well, you're the man to stoke it! You can't expect it to keep running indefinitely on last summer's enthusiasm. See to it that your participation percentages, and your deduction percentages, *both* end up the year at new levels.

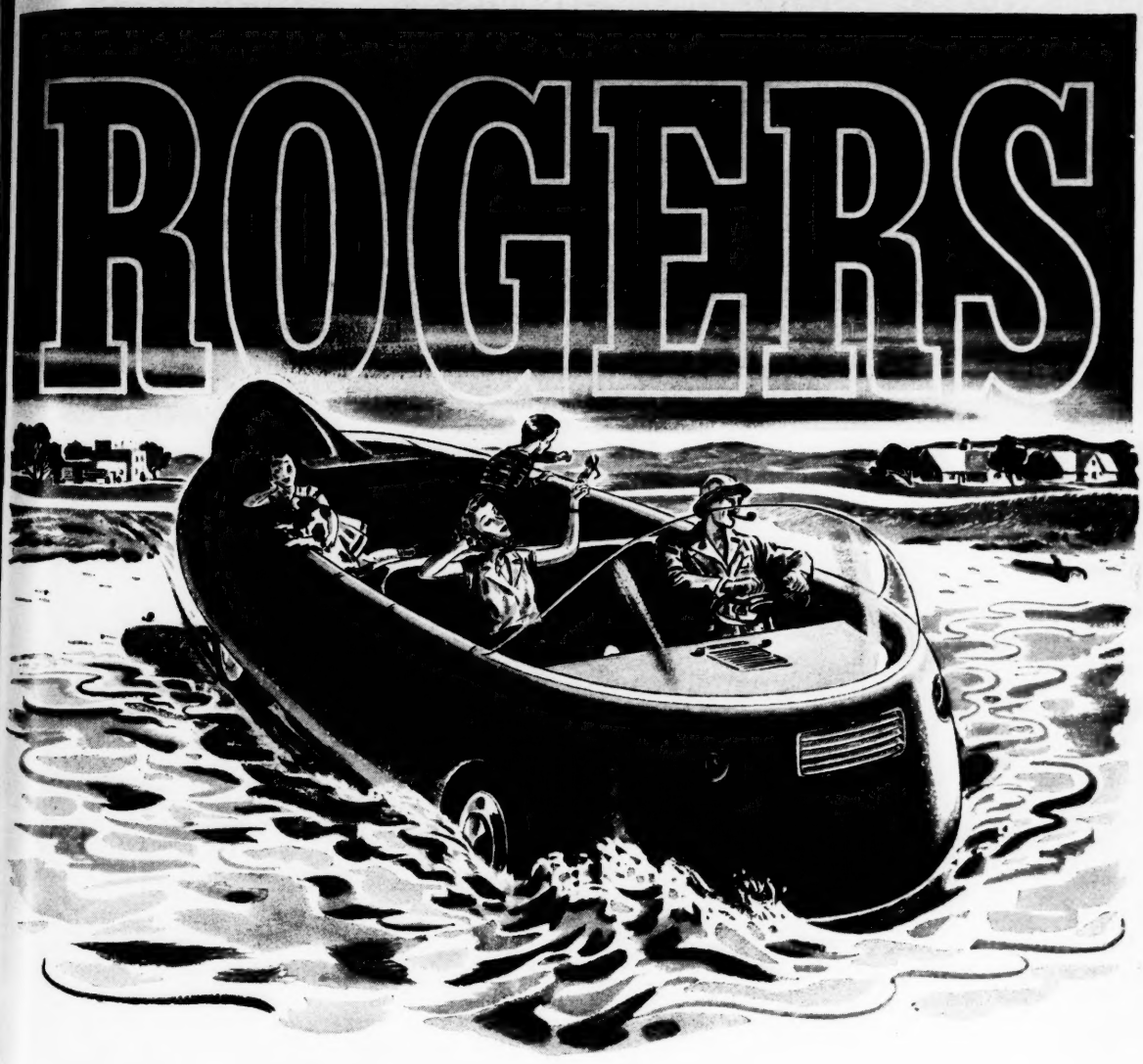
Every month, now your Pay-Roll Savings ought to run well ahead of the preceding month. *For so many families that formerly depended on the earnings of a single worker, now enjoy the combined earnings of several.* Such *family* incomes are doubled, trebled, even multiplied many times.

Now's the time to turn as much as possible of these increased earnings into War Bonds—War Bonds for Christmas . . . and War Bonds the whole year 'round!

GIVE THE PRESENT WITH A FUTURE—WAR BONDS!

This space contributed to Victory by **MANUFACTURERS RECORD**

This advertisement prepared under the auspices of the United States Treasury Department and the War Advertising Council



Why not?

Back in those happy days when every gas station had three attendants, and your standard instructions were "Fill 'er up!", didn't you and the family often come to a shoreline where you wished your car could be transformed into a water cruiser?

The Army Amphibious Forces have shown us the way! There is no reason we know of why the American family after Victory should not own an amphibious car.

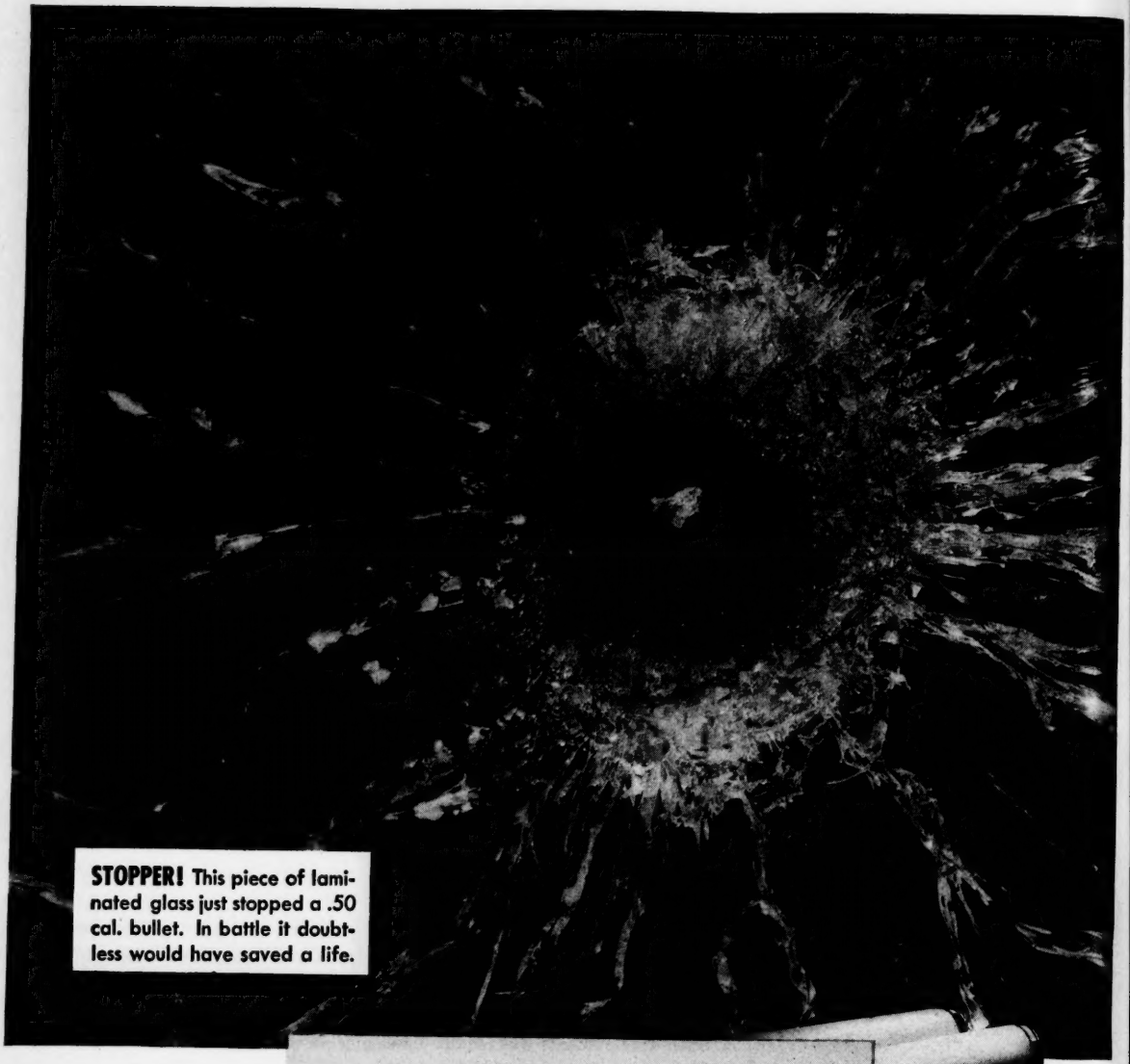
Such developments will require far-seeing users of power, and far-seeing manufacturers of power. Looking ahead, we see no greater possibilities than those in the field of diesel power, which is safe, economical, dependable, and requires little maintenance.

We are looking for far-seeing users. May we hear from you? Rogers Diesel and Aircraft Corporation, 1120 Leggett Ave., New York 59, N.Y. *Divisions:* Hill Diesel Engine Company; Edwards Aircraft Products, Inc.; Ideal Power Lawn Mower Company.

ROGERS DIESEL AND AIRCRAFT CORPORATION

Diesel Engines, 5 to 2000 h. p. » Gasoline Engines » Generator Sets » Generators » Power Units » Switchboards » Pumping Units » Hydraulic Aircraft Equipment » Recoil Mechanisms » Power Mowers » Power Brushes » Snow Removal Equipment » Streamlined deluxe Railway Motor Trains » Diesel Locomotives

Greater security for men



STOPPER! This piece of laminated glass just stopped a .50 cal. bullet. In battle it doubtless would have saved a life.

Westinghouse

MAZDA LAMPS

FOR BETTER "SEE-ABILITY"

en who man the flying guns

They deserve the best, and they're getting it, these brave young lads who fight it out, high in the sky. Today, in plants equipped for perfect *"See-ability,"* Industry is building amazing new gun turrets for them!

Pilot to Crew: "Fighters at 10 o'clock . . . *coming in fast!*"

And now the show is really on!

But, don't worry—our boys can take care of themselves. Better training, better guns, better planes and equipment—all have lengthened the odds in their favor.

Take those gleaming gun turrets, for example. They're made of plastic, polished and repolished until it's clear and eye-true as air.

And in many bombers, there are shrewdly positioned inserts of bullet-resisting glass, tough enough to stop a .50 cal. bullet or deflect an aircraft cannon shell!

It's mighty important work—building these turrets.

And throughout every step, from shaping the plastic to final inspection, "See-ability," through better, more scientific lighting, is helping men and women combine care and accuracy with speed and—still more speed.

Today Westinghouse Mazda Lamps are bringing better "See-ability" to countless industries. In every field they are helping set amazing new lighting standards for the world of tomorrow!

Continuous laboratory research and engineering enable Westinghouse to make lamps which are brighter, longer-lasting, lower in cost than ever before. Westinghouse Elec. & Mfg. Co., Lamp Division, Bloomfield, N. J. *Plants in 25 cities . . . offices everywhere.*

KEEP YOUR DOLLARS FIGHTING . . . BUY WAR BONDS

READERS' SPONTANEOUS RESPONSE

to articles and editorials

I always read your cover page, your editorials, and most of your articles with the greatest interest and appreciation. Somehow the editorials in your November issue struck me as being particularly fine. It is a great work you are doing and I hope that we can participate and help more and more as time passes.

FITZGERALD HALL,
President
THE NASHVILLE, CHATTANOOGA & ST. LOUIS RAILWAY
Nashville, Tennessee

All of us have been pleased and benefited by the splendid articles and editorials appearing in the MANUFACTURERS RECORD. They have been right to the point and reflect the same courage and common sense so characteristic of the RECORD all down through the years.

T. W. WIMMER,
Adv. Mgr.
VIRGINIA BRIDGE COMPANY
Roanoke, Virginia

Your editorials are very interesting; they are very succinct, pertinent and to the point, and written in very strong language, but not too strong as to the conditions to which they refer.

CHARLES F. COLE,
President
VIRGINIA MACHINERY & WELL COMPANY, INC.
Richmond, Virginia

Your magazine and your organization are doing a great piece of work for our country.

LEON C. PHILLIPS
(Former Governor of Oklahoma)
PHILLIPS, COE & HARKEY
Oklahoma City, Oklahoma

I congratulate you on your publication, and especially on your editorials and your viewpoint on our National problems.

W. B. McEWEN,
President
McEWEN LUMBER COMPANY
High Point, N. C.

The MANUFACTURERS RECORD is one of the oldest of American business papers. Since 1882 the purpose of this publication has been to develop the South and Southwest industrially through the fullest possible utilization of its raw materials and natural advantages.

IT SERVES executives by providing complete factual information about the South's resources; news of business trends, new industrial projects, expansion, priorities, defense program awards, substitute materials, etc.

I think your editorials are most excellent and wish it were possible for every American citizen to have a copy of all of them.

P. W. GAY
STEEL CITY LUMBER COMPANY
Birmingham, Alabama

We all look forward to receiving your publications month by month, as we feel you have done a wonderful job of helping the industrial South. We take this opportunity of congratulating you.

T. M. BARNHARDT, JR.
Secretary-Treasurer
BARNHARDT MANUFACTURING COMPANY
Charlotte, North Carolina

We have been following some of your editorials and think you have "hit the nail right on the head." We have enjoyed them and think they are the very things that should be said to the American public.

JNO. L. AVERY,
General Sales Manager
FROST LUMBER INDUSTRIES, INC.
Shreveport, Louisiana

The editorials that have recently appeared in the MANUFACTURERS RECORD are splendid; in fact, they are so good that we would like to mail out at least one thousand copies.

N. A. CARTER,
President
CARTER MANUFACTURING COMPANY
Memphis, Tennessee

You are to be commended, praised and congratulated all in the same breath for the noble work that you are doing in a time like the present.

L. W. HOWARD,
Enid, Oklahoma
BAKER MANUFACTURING COMPANY
Kansas City, Missouri

Please let us voice our unqualified endorsement of the sentiments expressed in your editorials. You are performing a real public service, and it would be an excellent thing if a copy of these editorials could be placed in the hands of every citizen.

H. C. BAILEY,
Secretary-Treasurer
ROANOKE IRON & BRIDGE WORKS, INC.
Roanoke, Virginia

A magazine such as yours, we think, deserves the support of every business in this country.

R. V. STONE,
Secretary
STONE LUMBER COMPANY
Bristol, Tenn.-Va.

I enjoy your editorials and many fine articles, and I hope you will keep up the good fight, so that some day our country will be returned to the real disciples of a "real democracy."

FRED W. WELLS
216 Fifth Avenue
Decatur, Georgia

More power to the MANUFACTURERS RECORD, as it contributes to a growing need in American business life.

WILLIS BAXTER BOYD,
Sec'y.-Mgr.
LEESVILLE-VERNON PARISH CHAMBER OF COMMERCE
Leesville, Louisiana

Write for copy of current issue. Your comments are welcome whether or not you agree with our viewpoints.

MANUFACTURERS RECORD

An executives' publication

BALTIMORE 3, MARYLAND

IN TWO WORLD WARS

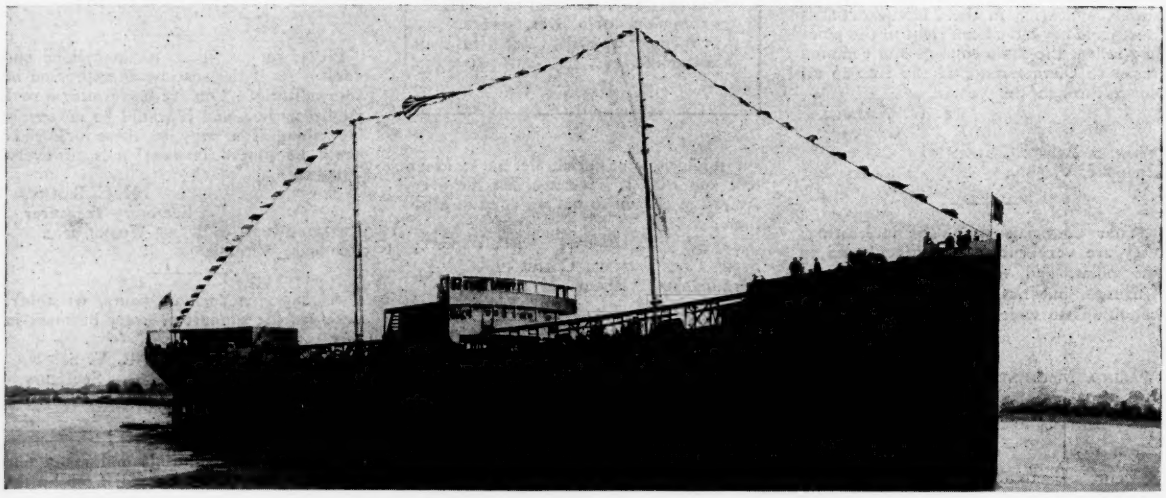
THE business of Port Wentworth Corporation was established in 1916. The business of its affiliate, Savannah & Atlanta Railway Company, was established ten years earlier, 1906. Over this long span of years, we have served Government and industry efficiently, honestly and well.

When World War I broke out, one of our deep water sites (comprising 162 acres) at Port Wentworth was chosen for a shipyard where tankers were constructed. The "Darden," reproduced below, was one of the ships launched in 1919.

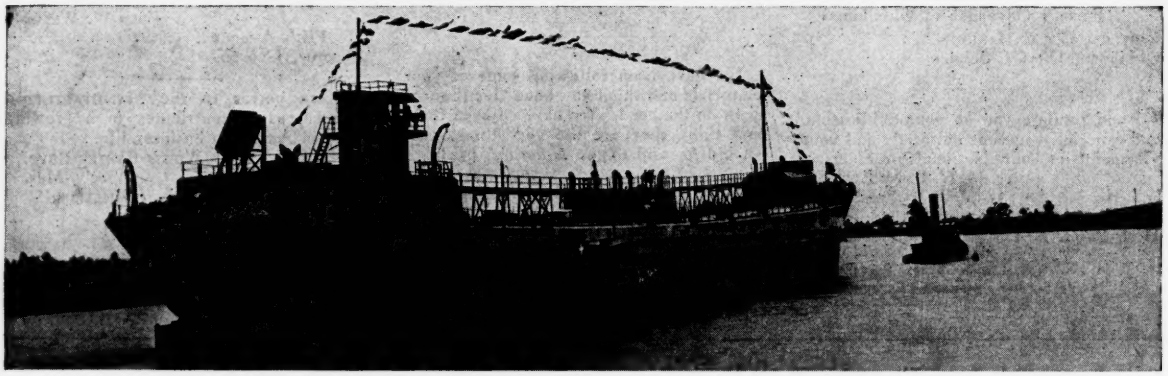
When World War II engulfed this Nation, the same site was again selected out of our 3000 acres as a shipyard for the construction of concrete tankers. "Concrete No. 6," reproduced below, was launched in May 1943.

The Town of Port Wentworth was begun during World War I. Its enlargement and modernization during World War II is a noteworthy achievement—a contribution to the war effort—a ready-made community ideal for post-war industry.

S.S. "Darden" launched at Port Wentworth World War No. 1



"Concrete No. 6" launched at Port Wentworth World War No. 2



To industrialists considering post-war plant locations in the South—let us prepare a brochure covering the advantages of Port Wentworth available to your particular industry—no obligation—all in confidence.

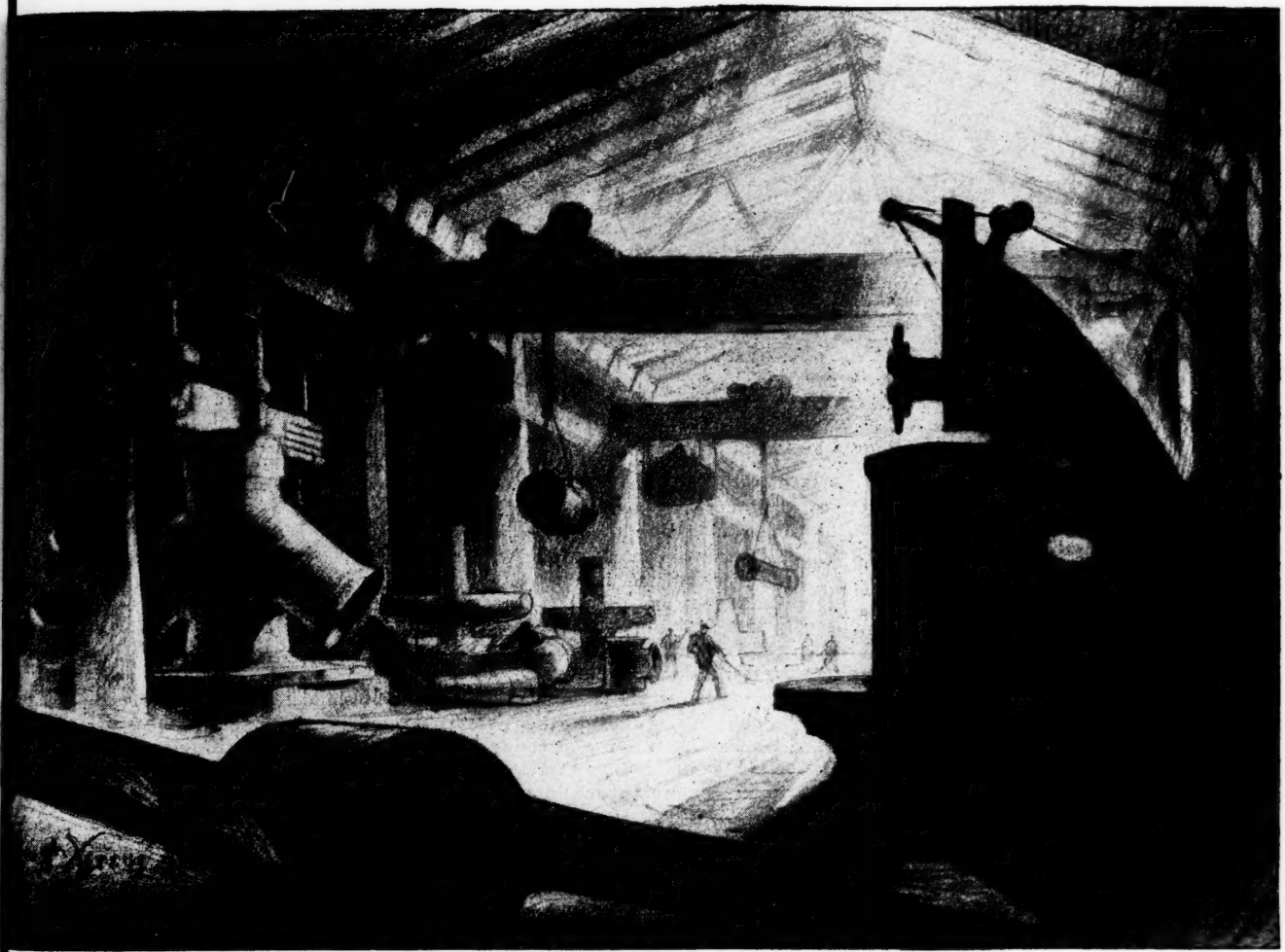
PORT WENTWORTH CORPORATION

New York—17 E. 42nd. St. Savannah—P. O. Box 1094

Wartime progress

Many thousands of tons of U. S. Cast Iron Pipe have been required for camps, air and naval bases, war plants and shipyards and their housing needs. With such war construction nearing completion, our pipe and fittings plants are again ready to produce promptly any requirements which cannot be immediately supplied from our amply-stocked storage yards.

Meanwhile, our special foundries and machine shops are contributing further to the war effort in the production of marine and other castings, as well as munitions and parts for war materiel. Some of this special production has required developments in methods and equipment undreamed-of in cast iron pressure pipe foundries a decade ago.

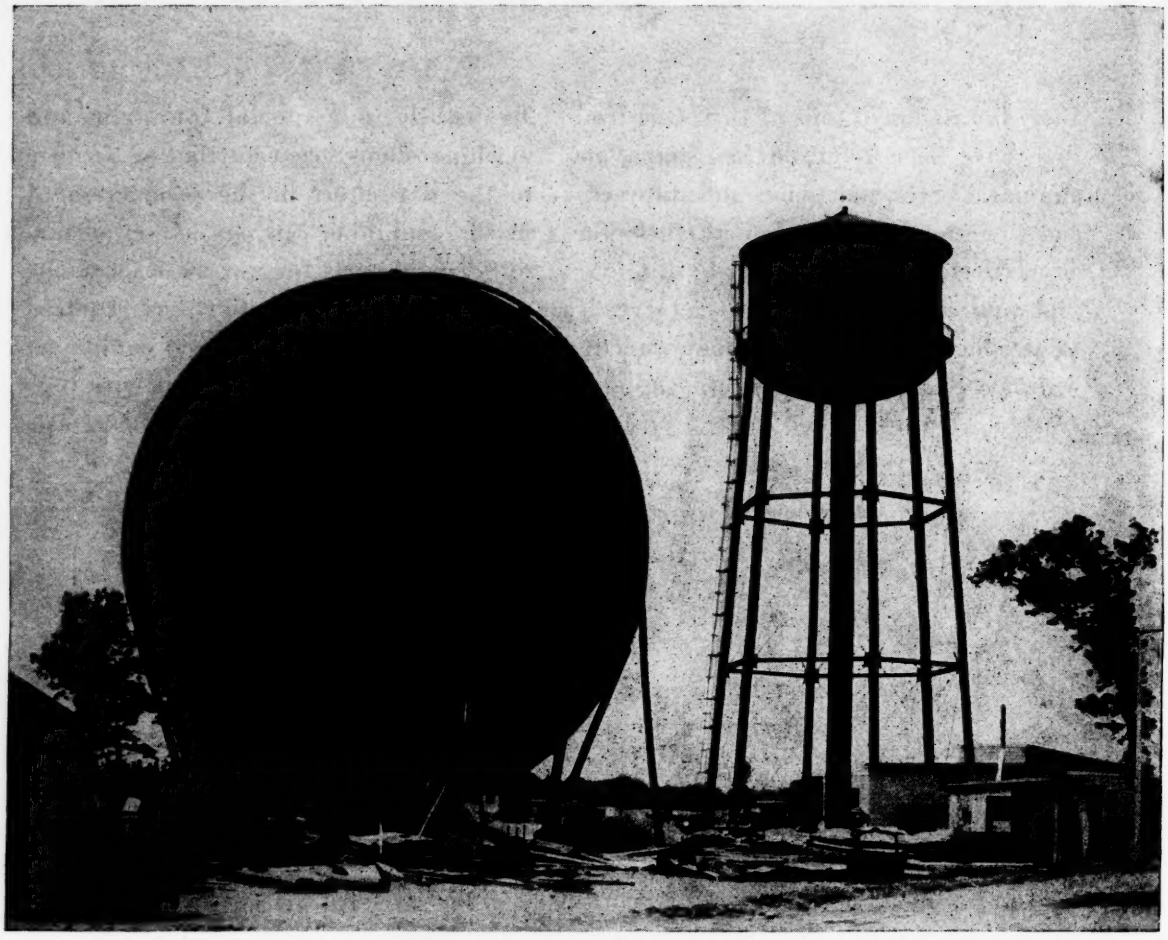


A machine shop in one of our plants, drawn by Hugh Ferriss.

UNITED STATES PIPE & FOUNDRY CO.

General Offices: Burlington, New Jersey. ***Plants and Sales Offices throughout the U. S. A.***

PERFORMING TWO IMPORTANT SERVICES . . .



HORTONSPHERES . . *for the storing of helium. The Hortonsphere shown is of welded construction 60 ft. in diameter and is designed for a maximum working pressure of 60 lbs. per sq. in.*

HORTON *Elevated Storage Tanks . . . provide gravity water pressure for general service. The structure shown above is 87 ft. 6 in. to bottom and has a capacity of 250,000 gals.*

THIS view shows a Hortonsphere and a Horton elevated tank installed at one location to solve two types of storage problems.

The Hortonsphere is used to store helium. Helium is a thin buoyant gas that must be held in vapor-tight vessel to prevent its escape into atmosphere. The Hortonsphere provides this type of storage and, because it has no moving parts to get out of order, eliminates the need of constant supervision.

The Horton elevated tank provides gravity water pressure for general service. By holding a reserve of water available at all times, elevated storage serves where water supply *must not fail.*

Industries with an eye on postwar expansion programs, can benefit by studying the role that elevated tanks and Hortonspheres are playing at today's military camps and training centers. Now is the time to start your postwar thinking. We invite your inquiries for future installations as well as for tanks and steel-plate work to meet present war production needs.

ARMY E NAVY

Eureka, Calif. Yard
Seneca, Ill. Shipyard
Newburgh, N. Y. Yard

CHICAGO BRIDGE & IRON COMPANY

Birmingham 1 .....1530 North Fiftieth Street
Houston 1 .....5614 Clinton Drive
Tulsa 3 .....1611 Hunt Building
New York 6 .....3313-165 Broadway Building
Cleveland 15 .....2216 Guildhall Building

Chicago 4 .....2106 McCormick Building
San Francisco 5 .....1040 Rialto Building
Philadelphia 3..1619-1700 Walnut Street Building
Havana .....402 Edificio Abreu
Washington 5 .....330 Bowen Building

Plants in BIRMINGHAM, CHICAGO and GREENVILLE, PENNSYLVANIA

"What Enriches the South Enriches the Nation"

By Their Fruits Ye Shall Know Them

— *Matthew 7:20*

The New Deal is destroying the last vestige of states' rights.

It has assumed control over the lives and welfare of our citizens by executive orders and bureaucratic regulations without authority of the representatives of the people in Congress.

It has set up boards within boards to act as judges in direct contradiction to the known principles of the Constitution of the United States.

It has criticized the free expression of the press.

It has withheld news from the public that could not possibly be construed as of value to the enemy and at the same time poured out political propaganda for our consumption that is inexcusable.

It keeps more than 3,200,000 people on the regular federal payroll. Even faster than Congress abolishes a bureau or a commission the New Deal transfers government pensionnaires to other equally useless or troublesome ones.

It has killed livestock and restricted or destroyed crops and thus has willfully destroyed food that would have made Russians, Chinese, Indians and natives of many other countries our "good neighbors" before the present war began.

It has produced a pre-Pearl Harbor national debt of more than 48 billion dollars. Now, under war conditions, it is impossible for any one except an astronomer to even estimate it.

For political purposes it has attempted to divide free Americans into classes. It has tried to divide them into groups—the laborer, the farmer and the businessman. It has not attempted to "class" the doctor or the lawyer or "the butcher, the baker and the candle stick maker." They do not profess to control mass votes.

It has wooed the Negro vote both openly and subtlely, openly in the North and subtlely in the South. It has created a feeling of race antagonism that has not existed since the days of the carpet-bagger.

It has accepted campaign contributions from a large labor union, and, with face saving gestures, it is still paying its debt. This debt is not only being paid at the expense of coal mine operators. It is being paid at the expense of every home owner who needs coal to keep his house warm.

In order to pay its political debts it has appointed to important administrative or judicial posts practically every New Deal candidate who has been repudiated by a popular election.

It has refused to face the tax problem squarely because it knows that the burden of taxes that should be levied would lose votes. It consistently refuses to consider the possibilities of a retail sales tax. Such a tax would syphon off the excess income from the multitude who, five years ago, never dreamed that they would earn so much money. This multitude of day by day spenders have caused higher prices, are causing inflation and will cause further inflation.

It has broadcast beautiful words that express beatific sentiments. It has contradicted almost every sentence thus publicly expressed by the action it has subsequently taken.

It has lowered government standards by its alliances with municipal political machines and self-seeking labor groups.

As a result of the behavior of our present government the electorate south, east, north and west is seeking an opportunity to vote for some worthy candidate and not be compelled, by primary election, to vote against one. It wants a choice between two competent men. It does not want the choice of accepting an "indispensable" man or voting for anyone who opposes him.

Shall We Cross The Rubicon?

For more than a few years the "smart boys" who would like to create the one all powerful government to whom every man, woman and child of our country must look for help, have cast envious eyes on the great assets administered by life insurance companies. They well know that these assets represent the savings of more than sixty-three million policyholders.

If the government can secure control of them, it will have a club to wield over the head of practically every mature citizen of the United States. These clever "boys" are inflicting their plans on all of us by indirection and duplicity. They have not come out in the open with a proposal for a Federal enactment that would take over the assets of the insurance companies, but they have proposed, through a foreign-born Senator, legislation that would establish a 6% employer and a 6% employee tax on the first three thousand dollars of every wage or salary. This proposed 12% tax on personal and business income is to finance a social security system consisting of:

1. A national system of public employment offices.
2. Old-age and survivors' insurance.
3. Permanent disability insurance and lump-sum death benefits.
4. Protection for the social security rights of men and women in military service.
5. Unemployment insurance.
6. Temporary disability insurance and maternity benefits.
7. Medical and hospitalization insurance.
8. Unemployment allowances upon termination of military service.

Such proposed legislation, if enacted into law, spells the death of individual enterprise and individual voluntary saving. It also means that our leaders, like Caesar, have crossed the Rubicon. This crossing ends the American way of life and begins the Hitlerian way.

It not only means that insurance companies will lose the revenue that their clients are able to pay them in the form of premiums, it means that their clients will lose the incentive to pay these premiums because they will feel (and who can blame them) that the Government will take care of them. Why should they invest in insurance?

It means a compulsory tax of 12% of the national turnover of salaries and wages up to $3,000. This can only result in inflation or destruction of private enterprise.

It means the socialization of the medical profession with the resulting lack of incentive to that profession which has contributed and is continuing to contribute as individuals so much to the welfare of each one of us.

In time of war sensible men realize that the bases on which their opinions should be formed are constantly fluctuating. They hesitate to propose ideas of a far-reaching scope. These same sensible men remember the fiasco of the 18th Amendment. They also remember the collapse of the NRA and the AAA, and they do not want the enactment of any legislation encroaching upon the freedom of the individual into law in times of international peril and domestic uncertainty.

Poll Tax

As a business paper the MANUFACTURERS RECORD is not concerned with the merits or demerits of a poll tax in any of the several states. It is, however, deeply interested in the attempt by the Federal Government to continue to encroach upon the rights, privileges, and duties of every State of the Union. It contends that a law to abolish a poll tax, passed by Congress and signed by the President would be unconstitutional.

In support of this opinion the Constitution of the United States is quoted as follows:

Article I—Section 2

The House of Representatives shall be composed of members chosen every second year by the people of the several States, and the electors in each State shall have the qualification requisite for electors of the most numerous branch of the State Legislature.

Article II—Section 1

1. The Executive power shall be vested in a President of the United States of America. He shall hold his office during the term of four years, and together with the Vice-President, chosen for the same term be elected as follows:

2. Each State shall appoint, in such manner as the Legislature thereof may direct, a number of electors equal to the whole number of Senators and Representatives to which the State may be entitled in the Congress; but no Senator or Representative or person holding an office of trust or profit under the United States shall be appointed an elector.

Recognition by the Federal Government that it was the privilege of the States under the Constitution to establish their own requirements, for voting eligibility is provided irrefutably by the passage of the 19th Amendment, which states:

"The right of citizens of the United States to vote shall not be denied or abridged by the United States or by any State on account of sex."

The right of the individual states to establish their own eligibility standards was changed by constitutional amendment.

The privilege of determining the qualifications of voters has always been reserved for the States, unless changed by constitutional amendment. Today each individual state has its own laws relating to the qualifications of any voter. In some states he must have been a resident for a specified period of time, in some he must declare his intention to continue to be a resident a year in advance of election—in practically all he must prove, if he is an alien by birth, that

he has become a United States citizen and that he can read and write. These are state laws passed under the authority of the Constitution.

The administration's fight to abolish state poll taxes is quite evidently another political gesture to gain votes. It is another move in the attempt to completely nationalize and unify in Washington an apex to the social and governmental structure of our country. These same people who advocate legislation, which if submitted to any fair Supreme Court, would be declared unconstitutional, have the affrontery to seek the support of the solid south under the guise and banner of a political party that formerly advocated state's rights.

Postscript on "Justice"

Among the many approving comments on the editorial "Justice," that appeared in the November issue of the MANUFACTURERS RECORD, is one from the High Point *Enterprise*, High Point, N. C. It quotes the editorial in full and then asks some questions as follows:

"Chief fault of the above editorial, we believe, is that it does not go far enough. What would the RECORD have the government do? Send soldiers in and order the miners back to work at the point of a gun?

"It is well enough to argue that the administration is responsible for the mine troubles in that it let the situation get out of hand. With that argument we, in a large measure, agree. But once the situation did get out of hand, the alternatives to taking over the mines, to us seemed worse than the action taken. One way out, of course, was to draft the miners for work, just as their brothers had been drafted for fighting. But that would mean a general labor draft for under our constitution one industry could not be singled out for such treatment. That would mean that every man in the country would be told where to work, for how long and for how much—as is done in totalitarian countries.

"Would the RECORD like that?"

It is not a question of whether the "RECORD" "would" like "that"—it is a question of "does" the "RECORD" like "that"—and the answer is "NO." It is being done now.

Workmen in all lines of so called essential industries—and essential industries and the classification of industires as essential is established by the government—are frozen in their jobs unless released by their employers, or through an appeal to a governmental agency. The "RECORD" does not believe in that. It fails to see the difference in principle between such procedure and a draft, except that it permits political and labor union manipulation, the first for votes, and the second for group power.

It is not necessary for the government to draft labor, either organized or unorganized, in order to prevent a recurrence of an episode such as John L. Lewis and his United Mine Workers inflicted upon the country recently. It is only necessary for the Government, acting in the interests of all American citizens, to take over the management and the assets of the organization responsible for such an episode. The Government has persistently penalized industrialists for the faults of labor.

How long do any of us think labor leaders would be able to dictate to their members if the direction of union policies were in the hands of impartial men who sought the best interests of the union members rather than their personal aggrandizement, and who were compelled to make the same kind of returns of income and expenses that are required of private individuals and corporations.

It is true that at present we have an administration bent and biased toward organized labor, but the pendulum is capable of swinging. It seems to be swinging now.

The "RECORD" does not believe in Government regulation—it believes that the function of government is to be a fair arbiter not between classes of its citizens, because it refuses to recognize classes of citizens, but between each individual and his neighbor or antagonist, so that JUSTICE may be administered under law.

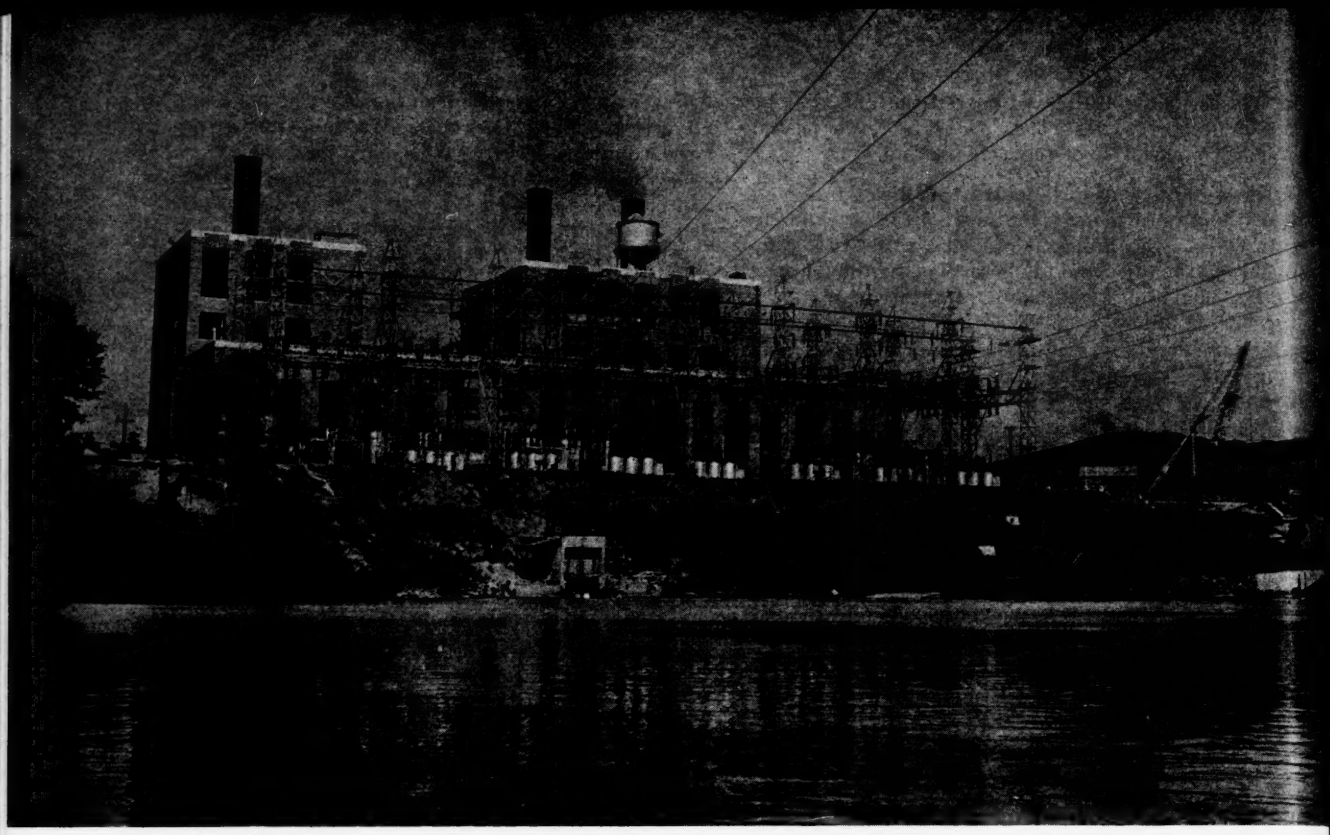
Root Hog or Die

Ever since the lush 1920s, the lean 1930s and the war disturbed 1940s America has measured its progress, or lack of it, in terms of dollars and cents. This statement is true both individually and collectively. Our people from the highest to the lowest strata of our society are more interested in the amount of food they can put in their stomachs than the amount of convolutions that they can put into the grey matter in their brains.

This national materialistic attitude is juvenile. It is the attitude of the baby who wants its bottle more than anything else in the world. It is quite a natural attitude for the baby to take. Its mind has not developed. As the baby becomes a child it wants to be amused. From childhood to youth it wants to play. From youth to manhood it wants to be amused and to learn. Once arrived at manhood it wants to continue to learn, but it also wants to think and to accomplish.

It is true that we must all eat in order to live, but it is also true that "man can not live by bread alone". The man who places "freedom from want" above "freedom" should sell himself to a totalitarian government or, if he is not yet quite ready to take that drastic step he should go into preliminary training for it by joining a labor union.

Stimulated by the New Deal idea—it can not be called philosophy—the people are nudging and crowding each other trying to get something for nothing like hogs at a trough. What will happen to them when the few with brains enough to mix the swill refuse to carry it to them? It will then be up to them to "root hog or die".



Big Plant Boosts Georgia Power Output

new unit adds three million kilowatt-hour daily capacity

PLANT Arkwright, newest of the Georgia Power Company's two great generating stations, has reached a greater peak of production with the recent start of operation of a third 40,000-kilowatt unit which has raised the plant's capacity to three million kilowatt-hours a day.

Completion of the new unit at Plant Arkwright now gives the Company two big steam generating stations with capacities of 120,000 kilowatts each. Plant Atkinson, on the Chattahoochee River near Atlanta, equals the Arkwright output, the difference being that the former has two units, whereas the latter has three units.

Installation of the third unit at Plant Arkwright culminated definite plans made after the southeastern drought of 1941, when it became apparent that more steam generating capacity would be necessary to protect Georgia power users against the vagaries of the weather.

The foundations for such a step had already been laid five years before. Georgia Power officials under the leadership of President Preston S. Arkwright, after whom the plant is named, proposed the project at that time, after it became obvious that new facilities had to be provided to keep pace with Georgia's advance.

The site at Macon was selected in 1938, purchase of materials began a year later, and ground was broken in February of 1940. The first unit — a 40,000-kilowatt machine—was placed on the line in June of 1941. Another of similar size started operating in May of 1942. Seventeen months later the third unit was serving the company's 268,000 customers.

Power demands of a State geared to the war program hastened the finish of the project and at the same time bore out the sound and previously made observation of Mr. Arkwright and his associates that such a plant was to be needed. The first unit went into service almost exactly six months before the Pearl Harbor attack.

Two major considerations resulted in selection of the site near Macon. The first was that electric power requirements for industrial and other consumers in central Georgia had foreshadowed erection of a plant in that area, and secondly, the geographical location of the plant would, in addition to supplying a greater quantity of power, improve the quality of service throughout a much wider territory.

Output of Plant Arkwright, coupled with that of Plant Atkinson, approximates two thirds of

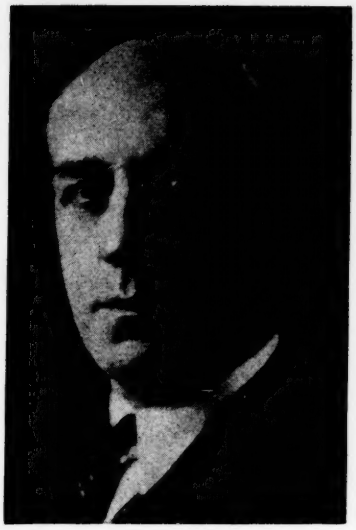
the power required for the Georgia area. Linked to the two power giants in the Georgia system are twenty-two hydroelectric plants and twenty-four smaller generators, as well as power available from interconnections with other systems.

The state is thus assured of an abundance of dependable electric power not only for war requirements during the current conflict but for the opportunities for further development that are expected to follow in the years to come, when Georgians predict even further economic and industrial gains for their Empire State of the South.

Plant Arkwright is the newest and most modern station in the system upon which will fall the obligation of furnishing the power for requirements to come. Coal for its operation will raise the level of mine output in Alabama, Kentucky and Tennessee, or increase consumption of natural gas from the Southwest in the summer when other requirements for such fuel are at a low ebb.

The plant is equipped to use either coal or natural gas. Daily consumption of the former is 1,440 tons, or twenty-eight carloads; of the latter, 45 million cubic feet every twenty-four hours, according to which is being used. The natural gas is piped direct to the plant from the wells and its use does not require the elaborate treatment incident to the burning of coal.

When the coal is delivered to the



Preston S. Arkwright

siding at the plant, a company-owned switch engine moves the car over a hopper located beneath a section of the railroad tracks alongside of the plant. The coal is dumped into the hopper, from which it moves by belt conveyor to a crusher and then by other conveyor to a storage pile for future use or into the coal bins or bunkers inside the building.

From the bunkers, the coal is fed by gravity into grinding mills called pulverizers. These dry and pulverize the coal into powder as fine as flour. Drawn from the pulverizers by fan, the coal is blown into the furnace where it burns like a huge jet of gas. The burners are set at an angle in the corners of the square box-like furnace and produce a whirling, spiral flame.

Each of the three generators in Plant Arkwright has its own boiler. These are tall as a 10-story building and inside each the blue-white flames soar upward eighty feet to maintain the interior temperature of 2,600 degrees Fahrenheit. The boilers consist of a multiple network of steel tubes, an arrangement which exposes a large area of the boiler to the heat of the burning fuel.

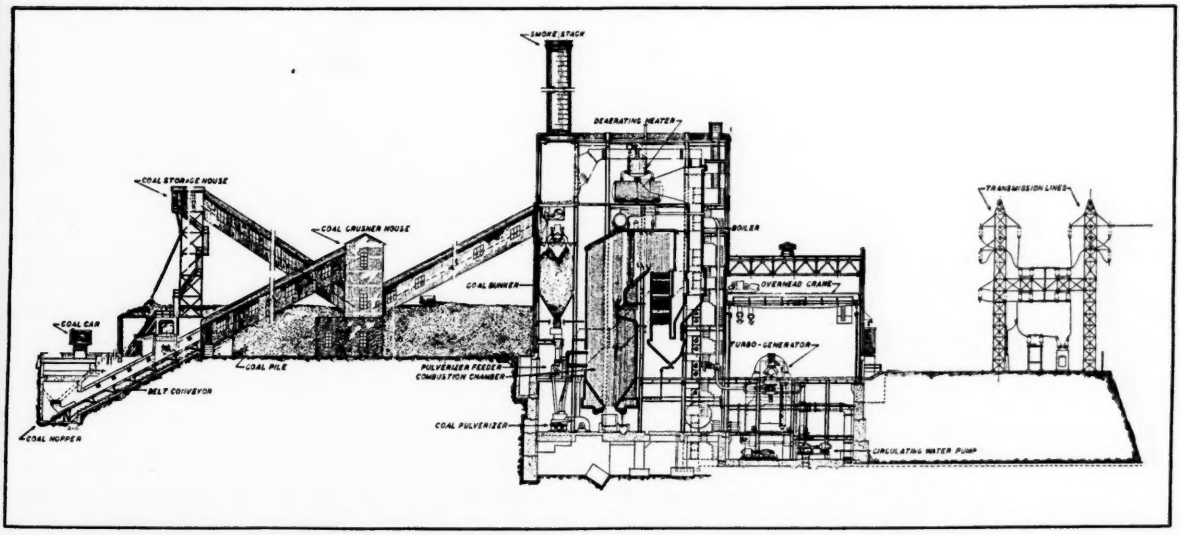
Water is pumped into the boiler to circulate a constant supply through the tubes to be changed by heat into steam. Pressure is maintained at 850 pounds per square inch. All water used in the boilers is purified by distillation; that is, the foreign matter is removed by evaporating the water and using only the condenser vapor in the boilers. The water is also chemically treated.

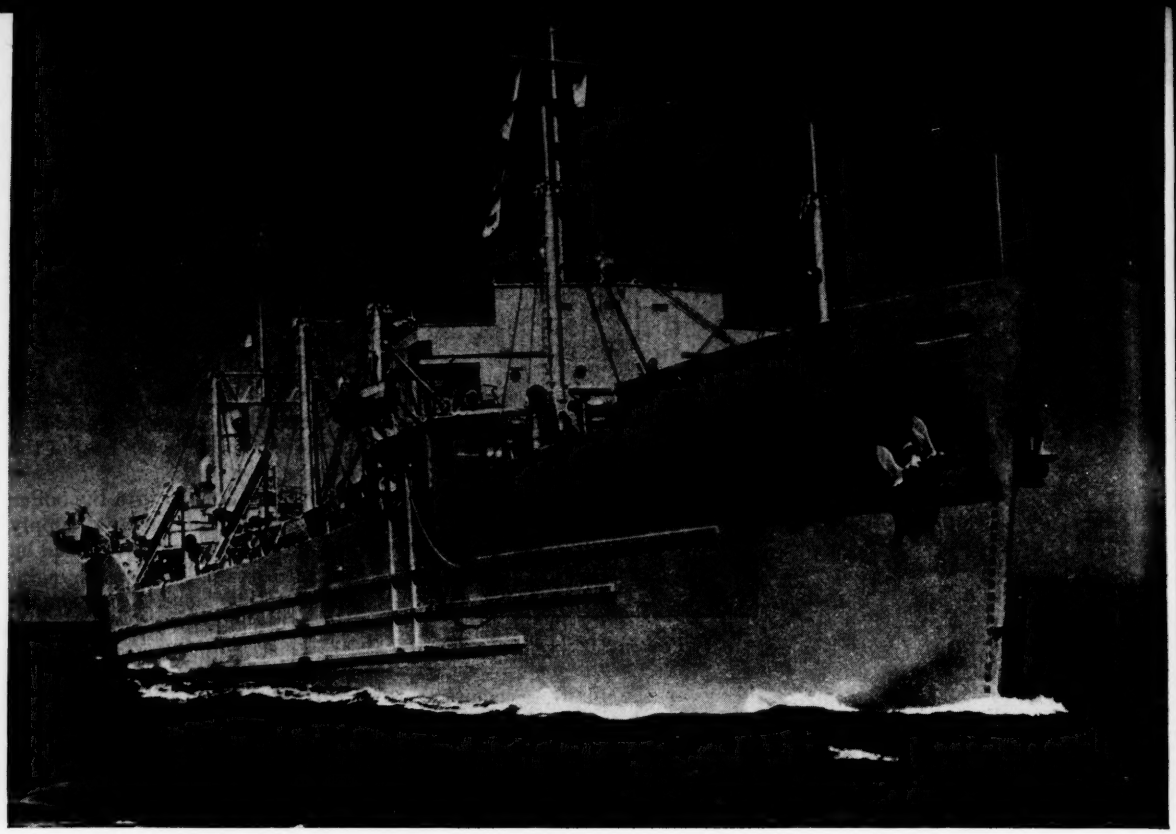
Air is an important factor in the combustion process, as enormous quantities are required to produce the heat necessary to change the water to steam. This air is supplied under pressure by large fans called forced draft fans which blow the air into the furnace along with the fuel. Each of the Arkwright fans has a capacity of 140,000 cubic feet of air a minute.

Furnace gases, which would naturally rise and pass out of the chimney are speeded on their journey by induced draft fans. These

(*Continued on page* 68)

Below—How a big, modern power plant operates.





America's First Concrete Ship

built at Tampa, and now on its maiden voyage

By
NEAL A. MELICK
Project Manager
McCloskey & Company

WHEN the history of American shipbuilding in World War II is written, one of the most interesting chapters will deal with concrete vessels.

Ships made of concrete were projected and actually built as a means of meeting the U-boat menace during the last war, but that conflict ended before they received conclusive tests. They are being built today under similar exigencies, but this time it looks as if their case will be recorded fully for posterity, for nine hulls already have been launched at Tampa, Fla., and are being outfitted for the United States Maritime Commission.

One of the ships, the David O. Saylor, has gone into service after passing the rigid tests of the Maritime Commission. It is now on its maiden voyage and the shipbuilding industry is watching its performance with keen interest.

At the outbreak of World War II, when it became apparent that the United States would have to draw upon every resource to meet the Axis threat, the Commission decided to supplement its production of steel ships with concrete vessels. A survey of steel stock piles and plant potentialities convinced the commission that a shortage was imminent. As some experimentation had been made with concrete carriers in the last war, it was decided to turn again to this type of construction.

A contract for 24 self-propelled concrete ships was awarded to McCloskey & Co., of Philadelphia, heavy building contractors who had dotted Pennsylvania and the District of Columbia with numerous important governmental buildings. M. H. McCloskey, Jr., president of the company, selected a 300-acre site at Hooker's Point, Tampa, as the most suitable place for the plant.

(*Continued on page 60*)

Top of page—Concrete that floats—The S. S. David O. Saylor, first self-propelled concrete ship constructed in America during World War II, churns the waters of the Gulf of Mexico. The vessel is now in service after passing rigid Maritime Commission tests. McCloskey & Company's shipyard, Tampa, Fla., is building 24 of the ships. Nine hulls have been launched and six others are under construction.

High Spots in the Case for Return to

The International Gold Standard

By

EDWIN WALTER KEMMERER

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INTERNATIONAL NEWS SERVICE

THE present war broke out in the Autumn of 1939 after ten years of widespread economic crises and depressions. During that period the monetary systems of all important nations and of most minor ones broke down, and metallic-money standards everywhere gave way to depreciated and depreciating managed paper-money standards. In 1939, the only metallic money standard of importance left in the world was that of the United States, and our then recently restored American gold standard was a weak hybrid — a mongrel which resembled its managed paper-money-standard father almost as much as it did its gold-standard mother.

As the War has progressed the paper-money standards of most countries have grown progressively worse and inflation has become rampant. Every one of the thirty-one countries for which the League of Nations publishes price index numbers has experienced inflation since 1939, and in the majority of them it has been serious. The end is not yet.

No nation in the world today would want to look forward to a continuation after the War of its present monetary system.

The problem of world-wide monetary reorganization is, therefore, one that urgently demands an early solution. How will we solve it?

RECOMMENDATION FOR THE GOLD STANDARD

In the summer of 1931, the famous MacMillan Committee, consisting of fourteen eminent British financiers and economists, made its Report on Finance and Industry. Although there was one dissenting opinion, that of Lord Bradbury, and although certain reservations were made by other members of the Committee including John Maynard Keynes, no one dissented from the recommendation for the retention of the gold standard. On this subject the Committee said, "There is, perhaps, no more important object in the field of human technique than that the world as a whole should achieve a sound and scientific monetary system. But there can be little or no hope of progress at an early date for the monetary system of the world as a whole, except as the result of a process of evolution starting from the historic gold standard." With this declaration I am in full agreement and this article is a brief statement of my principal reasons for this judgment.

PUBLIC CONFIDENCE IN GOLD

The first requirement of any post-war monetary standard, that can be widely adopted internationally and maintained for any considerable time, is that it shall have the confidence of the people. It should be free from international jealousies. Like Caesar's wife, the standard should be above suspicion. To this end it should be simple and be a development out of a long common experience. The people distrust what they do not understand.

To be kept simple and to function efficiently and not at cross purposes the monetary system should be kept free from extraneous matters either of a fiscal or social-reform nature. The chief functions of money are those of providing the public with a common measure of value and with efficient and stable media of exchange. These are highly important functions and every monetary system should be organized and operated with the primary purpose of performing them well. All too often monetary systems have been wrecked on the rocks of fiscal opportunism.

The instinct for gold is a universal one. It is found among all peoples, savage and civilized, throughout history. Gold is today, as it has been for centuries, the most widely treasured and the most highly marketable commodity in the world. This high public esteem for gold is not likely to disappear quickly. The value of an ounce of gold in terms of its purchasing power over commodities in the United States during the half decade 1936-1940 was greater than for any other quinquennium back to the beginning of our price index numbers in 1801. This was true, moreover, in face of the fact that the large world production of gold since 1929 has been equal to the world's total known stock of monetary gold in 1923—the accumulation of the ages up to that time.

No other kind of a currency system in a distracted post-war world

(*Continued on page 51*)

As a Fellow at Princeton University before the last war it was the Editor's privilege to learn to know Dr. Kemmerer.

If there is any one man in America, or for that matter in the world, who is qualified to express his thoughts on the proper standard on which money should be based, it is Dr. Kemmerer. He has been directly responsible for the monetary systems of countries from China and the Philippines to South Africa and South America. There are so many of the latter that memory makes it impossible to enumerate them.

Dr. Kemmerer is now Professor Emeritus at Princeton University.

Bill Smith - - engineman, views

National and World Problems

By

D. B. ROBERTSON
President,
Brotherhood of Locomotive
Firemen and Enginemen

MY thinking on national and world post-war concepts, currently being considered by countless conferences, would become much confused, were it not that for many years—being a simple labor representative—I have been accustomed to consider national and world problems in terms of engineman Bill Smith and his family. If world planning is contrary to his interests, you cannot blame me for casting a questioning glance in the direction of the planners; for the nation and the world are made up of the Bill Smiths and their families.

In a Democracy the virtue of the State is drawn inevitably from the individual. Confucius in 551 B.C. expressed this eternal truth, when he gave to the world a blue print for the "Perfect State."

"The ancients who wished to illustrate illustrious virtue throughout the empire, first ordered well their own States. Wishing to order well their States, they first regulated their families. Wishing to regulate their families, they first cultivated their persons. Wishing to cultivate their persons, they first rectified their hearts. Wishing to rectify their hearts, they first sought to be sincere in their thoughts. Wishing to be sincere in their thoughts, they first extended to the utmost their knowledge. Such extension of knowledge lay in the investigation of things."

As suggested in this quotation, the ultimate success of a democratic State is directly dependent upon the responsibility of the individual.

INDIVIDUAL RESPONSIBILITY

Within this ancient truth you will find Bill Smith's family responsibility. As a part of his individual responsibility today Bill Smith is given the right to choose representatives, such as myself, to perform independent and well-informed service for him and his co-workers. Also as a part of his individual responsibility he looks to his Y. M. C. A., his church, his school, his museum and his library to help him. And Bill Smith in this great Democracy of ours—a democracy of free men—is today manifesting an ever-increasing sense of individual responsibility. It is more and more clear to him that he fights this global war for the survival of righteousness and freedom.

If State or world planners move contrary to this principle of individual responsibility, you may be sure that Bill Smith and his millions of brothers will resist with all the power that they command.

Now, there is another primary principle by which Bill Smith lives, where world planners might become unwisely involved. It is found in the New Testament, First Timothy, Fifth Chapter, Eighth Verse:

"But if any provide not for his own, and specially for those of his own house, he hath denied the faith, and is worse than an infidel."

WHAT POST-WAR PLANS MUST RECOGNIZE

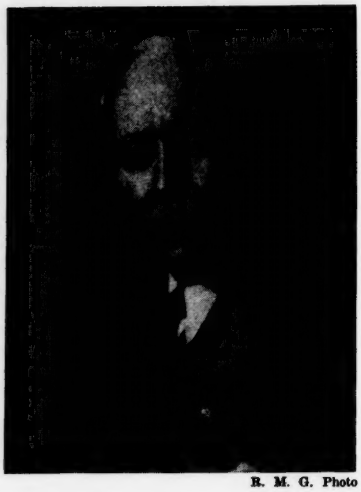
The post-war plan of American and world economy must lead to the recognition of these two fundamental principles,—individual responsibility through freedom of action under law, and Bill Smith's right to provide adequately for his family.

The American way of life has demonstrated tolerance, popular enlightenment, free discussion, and recognition of the value of life and the dignity of the individual, honor and truth-telling and the principles of morality. Because Bill is thus rooted he does not want indoctrination as a substitute for education. It is my observation that he does not regard moral principles as old-fashioned prejudices. As he fights in this war to maintain those principles, so he will fight to preserve them for the peace.

Bill is for this all-out war. He is for lend-lease, the drafting of his sons, and an efficient rationing system in order to sustain our armed forces and our Allies. He is zealously willing to make essential sacrifices of all kinds to win the war. But Bill Smith also wants to win the peace, and from my recent contact with thousands of workers, I can assure you that he has

(Continued on page 52)

Below—D. B. Robertson, author of this "Bill Smith" story has been affiliated with the Brotherhood of Locomotive Firemen and Enginemen since 1899, serving in various other capacities up to his election to the presidency in 1922. Mr. Robertson was born in Ohio, and at the age of 12 entered the employ of a Youngstown nut and bolt company. He later went to work for a sheet and tube company and entered the employ of the Pennsylvania Railroad in 1895. He was a locomotive fireman for the Erie in 1898 and was promoted to locomotive engineer in 1902.



R. M. G. Photo

Southern Construction in November Rises to $138,396,000

industry projects chief aid in climb

By

SAMUEL A. LAUVER
News Editor

BOLSTERED by higher industrial construction figures, Southern contracts totaling $138,396,000 during November represented an increase of sixty-four per cent over the preceding month and the highest level of construction below the Mason and Dixon line in five months.

Industrial awards mounted to $67,209,000, the strongest total for this type of construction in the South since the March peak of $80,102,000. The increase over October industrial awards was almost four hundred per cent. No other month of this year has witnessed a percentage increase of such magnitude.

A widely publicized natural gas pipeline across six states was a substantial factor in the larger industrial total, as were several other projects including a tire factory, an aircraft plant addition and extensions to the facilities of a large southern rayon producer.

The current November industrial total compares favorably with that for the eleventh month of 1942. The situations in the two months were similar. Accelerated activity in several industrial fields was largely responsible for the higher totals of each month. Then it was aircraft manufacture and oil refining.

Private building was stronger, public engineering contracts showed a slight increase and public building dropped during November. Highway and bridge construction was also down.

The November private building total was $10,034,000, an eleven per cent rise over the value placed on such work in the preceding month. Most of the total represented residential construction.

Public engineering construction aggregated $18,775,000, remaining at practically the same level as in October. The slight rise was between one and two per cent. Sewer and water works projects, airfield construction and several important dredging contracts contributed to the figure.

The drop in November public building, as compared with the preceding month was five per cent. More than the usual number of hospital projects, as well as various military and naval installations were embraced in the total. A continued tapering in this field has been evident for the last three months.

Southern construction awards accumulated so far this year total $1,413,884,000. Thirty-one per cent of the eleven-month total for 1942, when southern contracts sky-rocketed to an all-time record, the current figure is higher than for the eleven months of any year of the past up to and including 1940.

The construction picture, as reviewed over the eleven elapsed months of 1943, shows the current period to be similar to that of last year. Public building has rolled up the largest total—$602,305,000—and occupies the premiere position. Second on the list this year, as last, is industrial construction with its total of $319,998,000.

Public engineering construction, highway and bridge building, and private building follow in the order named. The totals for each are $293,325,000, $123,786,000 and $74,470,000, respectively.

The several major classifications, from a percentage standpoint, represent: Public building, 43 per cent; industrial construction, 23 per cent; public engineering work, 20 per cent; highway and bridge building, nine per cent, and private building, five per cent.

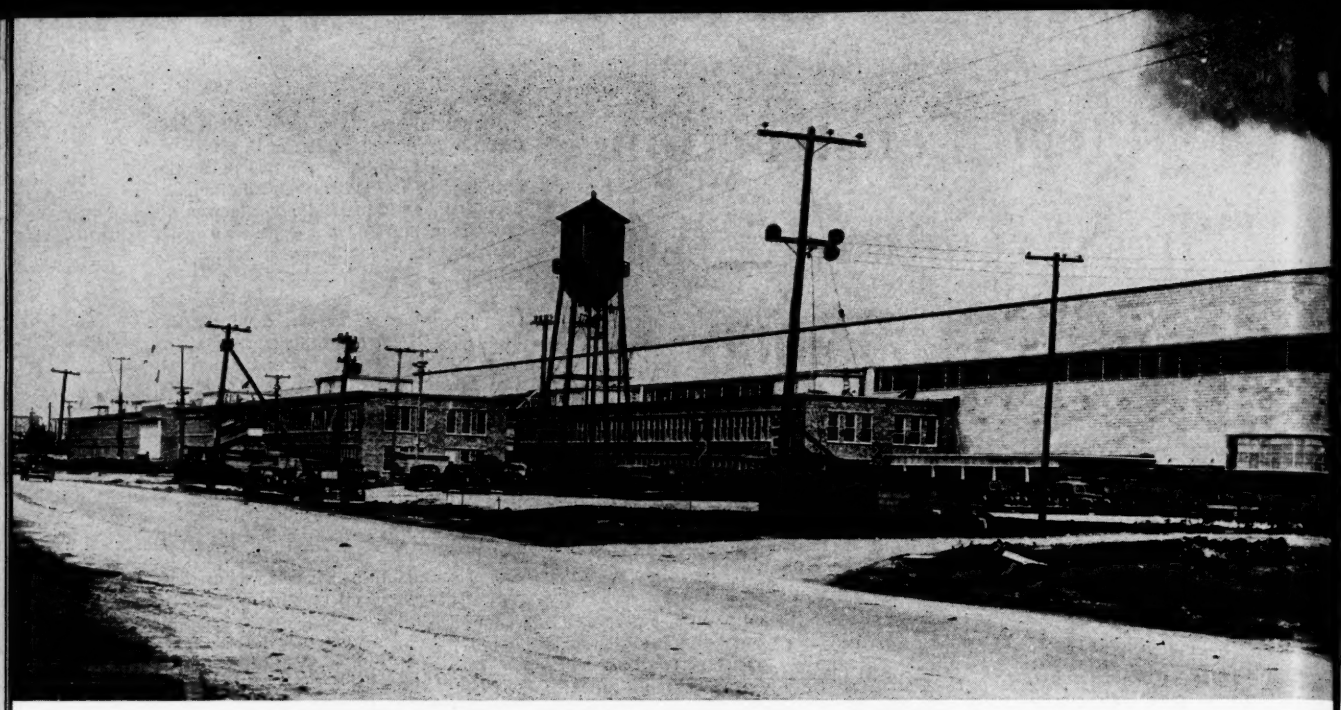
(*Continued on page 50*)

South's Construction by Types

	November, 1943 Contracts Awarded	November, 1943 Contracts to be Awarded	Contracts Awarded First Eleven Months 1943	Contracts Awarded First Eleven Months 1942
PRIVATE BUILDING				
Assembly (Churches, Theatres, Auditoriums, Fraternal)	$353,000	$550,000	$1,665,000	$4,386,000
Commercial (Stores, Restaurants, Filling Stations, Garages)	86,000	125,000	1,933,000	4,714,000
Residential (Apartments, Hotels, Dwellings)	9,370,000	2,930,000	70,709,000	103,728,000
Office	25,000	5,000	163,000	1,243,000
	$10,034,000	$3,610,000	$74,470,000	$114,071,000
INDUSTRIAL	$67,029,000	$6,689,000	$319,998,000	$1,072,562,000
PUBLIC BUILDING				
City, County, State, Federal	$20,800,000	$13,599,000	$393,856,000	$1,736,571,000
Housing	13,075,000	18,746,000	193,304,000	223,250,000
Schools	794,000	3,667,000	15,145,000	32,311,000
	$34,669,000	$36,012,000	$602,305,000	$1,992,132,000
ENGINEERING				
Dams, Drainags, Earthwork, Airports	$15,580,000	$24,355,000	$253,473,000	$329,469,000
Federal, County, Municipal Electric	60,000	320,000	5,230,000	21,405,000
Sewers and Waterworks	3,135,000	4,240,000	34,622,000	76,392,000
	$18,775,000	$28,915,000	$293,325,000	$427,266,000
ROADS, STREETS AND BRIDGES	$7,889,000	$4,078,000	$123,786,000	$159,698,000
TOTAL	$138,396,000	$79,304,000	$1,413,884,000	$3,765,729,000

South's Construction by States

	November, 1943 Contracts Awarded	November, 1943 Contracts to be Awarded	Contracts Awarded First Eleven Months 1943	Contracts Awarded First Eleven Months 1942
Alabama	$4,545,000	$1,740,000	$49,858,000	$175,173,000
Arkansas	7,149,000	776,000	39,249,000	96,235,000
Dist. of Col.	523,000	1,840,000	15,182,000	66,397,000
Florida	11,000,000	15,399,000	180,628,000	286,559,000
Georgia	6,610,000	10,261,000	89,223,000	191,697,000
Kentucky	9,906,000	750,000	41,276,000	107,903,000
Louisiana	10,001,000	3,995,000	80,542,000	265,366,000
Maryland	7,508,000	3,904,000	96,420,000	216,755,000
Mississippi	6,351,000	610,000	40,409,000	193,545,000
Missouri	493,000	1,258,000	20,787,000	184,096,000
N. Carolina	2,191,000	3,095,000	55,461,000	176,596,000
Oklahoma	3,389,000	1,345,000	105,335,000	209,788,000
S. Carolina	1,949,000	1,763,000	48,247,000	100,710,000
Tennessee	8,898,000	3,883,000	96,942,000	281,864,000
Texas	38,522,000	15,866,000	354,257,000	921,398,000
Virginia	13,599,000	12,719,000	84,466,000	254,230,000
W. Virginia	5,762,000	100,000	15,602,000	37,417,000
TOTAL	$138,396,000	$79,304,000	$1,413,884,000	$3,765,729,000



New Orleans Plant to Produce Curtiss Commando Planes

HIGGINS Aircraft, Inc., New Orleans, joined the ranks of the Nation's leading aircraft manufacturers six weeks ago when it dedicated the huge $27,000,000 plant for production of Curtiss C-46 Commando transport planes for the Army Air Force.

Top of page—A stretch of the wall of the new $27,000,000 Higgins Aircraft plant at New Orleans.

The aircraft plant, with its adjacent plywood factory, lumber mill, storage kilns and docks capable of serving big ocean vessels, was erected on the site of the Michaud shipyard, where a little over a year ago Andrew Jackson Higgins, Sr., head of Higgins Aircraft organization, planned to build 200 Liberty ships for the United States Maritime Commission.

Twenty-five thousand workers will be employed at the new plant when it reaches its full-scale output of the big sky transport craft, one of which was flown to the dedication from Buffalo, N. Y. The C-46 is the largest twin engine plane made and is also being built in the Buffalo and St. Louis plants operated by Curtis-Wright Corp. The Higgins plant, in addition to turning out the finished planes, will construct outter wing panels for the New York factory.

Gov. Sam H. Jones, of Louisiana, during the dedication ceremonies, described the plant as "the fulfillment of a great dream by a great builder," and added that it was the result of the will "of one individual who refused to accept defeat." The plant is located on the site of the shipyard Mr.

Left—Another speaker at the dedication of the new Higgins aircraft plant was Brig. Gen. K. B. Wolfe, of the Army Air Force, from Atlanta.

Higgins was establishing when his contract for constructing the Liberty ships was cancelled last year.

The plant was completed far ahead of schedule, according to Mr. Higgins, who pointed out that its cost had been kept within the original estimates of twenty-seven million dollars. Speakers on the program, in addition to Mr. Higgins, included Col. Bryant L. Boatner, chief of the Army Air Forces modification center program, who represented Brig. Gen. Charles E. Bradshaw, commandant of Wright Field; Col. William M. Morgan, of Wright Field, and Maj. John H. Carey, representing Brig. Gen. James Mollison, Mobile Air Service Command.

Colonel Morgan in his address lauded Mr. Higgins and his associates by saying they were men "who have a wide reputation as go-getters". The plant was called a "milestone on the road to victory" by Major Carey, who urged the workers who will operate it to remember how badly transport planes are needed on the fight fronts of the world. Gen. R. H. Harris, of the Wichita Procurement District, was unable to be present, but in a telegram emphasized the importance of the C-46 in the war effort.

Gen. Henry Arnold, chief of the Army Air Forces, and Maj. Gen. Barney Giles joined in a telegraphic message to the gathering. They said that the air forces expected the workers to show the same enthusiasm and spirit in connection with the manufacture of airplane parts and airplanes as they had shown in manufacture of other weapons of war.

Higgins airport, now being completed adjacent to the plant, is said to be the largest in the south, stretching in a great triangle bounded on one side by a ship channel originally dredged for a ship launching basin. The canal, from which the fill for the port was obtained, provides a landing area for both amphibians and seaplanes.

Because of the ground level, which is five feet higher than the business district of nearby New Orleans, the site is known locally as Higgins Heights. Filling it to that level was one of the world's largest dredging and fill jobs, it was pointed out by Higgins officials. The dedication ceremonies were held inside the 45-acre main building, which is completely equipped with air conditioning and humidity control.

The two-story building is steel frame, permanent construction. Connected to it is a 1400-foot engineering structure and a 900-foot administration building. The layout is reported to be the largest under one roof south of the Mason and Dixon line. It houses a machine shop four blocks long. The floor plan was laid out with Higgins production line methods as the basis.

Architects for the plane plant project were Albert Kahn Associated Architects and Engineers, Inc., noted Detroit designers of many of the finest aviation plants in the United States. The Higgins structure contains the latest improvements and refinements based on Kahn experience.

Contractors were the Turner-Raymond Company, a joint enter-

(*Continued on page 50*)

Above—Gov. Sam Houston Jones, of Louisiana, was one of the main speakers at the Higgins aircraft plant dedication. Andrew Jackson Higgins, Sr., president of company, is at the right; Col. John H. Jouett, executive vice president, at the left. Colonel Jouett is a former president of the Aeronautical Chamber of Commerce.

Below—Part of the crowd at the Higgins aircraft plant dedication. Gov. Sam H. Jones, of Louisiana, described the plant as "the fulfillment of a great dream by a great builder."

Oil Shortage, an Admitted Fact, Says I.P.A. Executive

By

LAWRENCE E. SMITH

Independent Petroleum Association of America

BACK of the oil price controversy which has been under way for more than two years is the question of adequate oil supply. The argument began with a prediction that the rate of production in the United States would not be adequate for the anticipated huge demands for the conduct of the war and for essential civilian requirements. The prediction has been realized; the shortage is an admitted fact.

The Petroleum Administrator for War came into the discussion in a positive way in April, 1943, when he recommended to the Office of Price Administration that the price ceilings on crude petroleum be raised by an average of 35 cents per barrel. This was rejected, renewed, again rejected and finally appealed by the Petroleum Administrator to the Director of Economic Stabilization who, on October 29 added his rejection to the list.

Alternatives were proposed by the latter official. They were an enlarged drilling program—which oil operators contend cannot be achieved with present income; some system of "incentives," not defined and previously condemned as unworkable by the Petroleum Administrator; and greater rate of imports of foreign oil.

At this time the interest of Congress is being shown. Previously, over a period of many months Committees of Congress had investigated and had recommended upward adjustment of prices to take care of the greatly increased costs. Numerous Governors of oil-producing States and other State officials who function in the administration of conservation laws on oil and gas, had urged price correction as the means of stimulating efforts to find new fields and to maintain in efficient operation those already producing.

Legislation is now before the House to do that which the price-control agencies have refused to do.

The daily production of crude oil in the United States is at an all-time high. It has been declared repeatedly by Government petroleum authorities that no excess producing capacity exists except in western Texas, where transportation facilities are now inadequate to draw upon such excess. Additional pipelines are under way to this area, but will not be completed before next March or April and by that time, it is predicted by those who observe trends closely, declines in other areas will offset partly, if not wholly, the additional amount to be taken from western Texas.

The industry entered the war with a substantial reserve producing capacity which had been built up over a period of years. The discoveries of new fields in the late '20s and up to 1938 were many and large—much in excess of the demand for oil. This reserve has been drawn down and new drilling has not been sufficient to replace it; new drilling both in the results obtained from attempts to find new fields and in proven fields, also.

It is axiomatic, of course, that new drilling must be done on large

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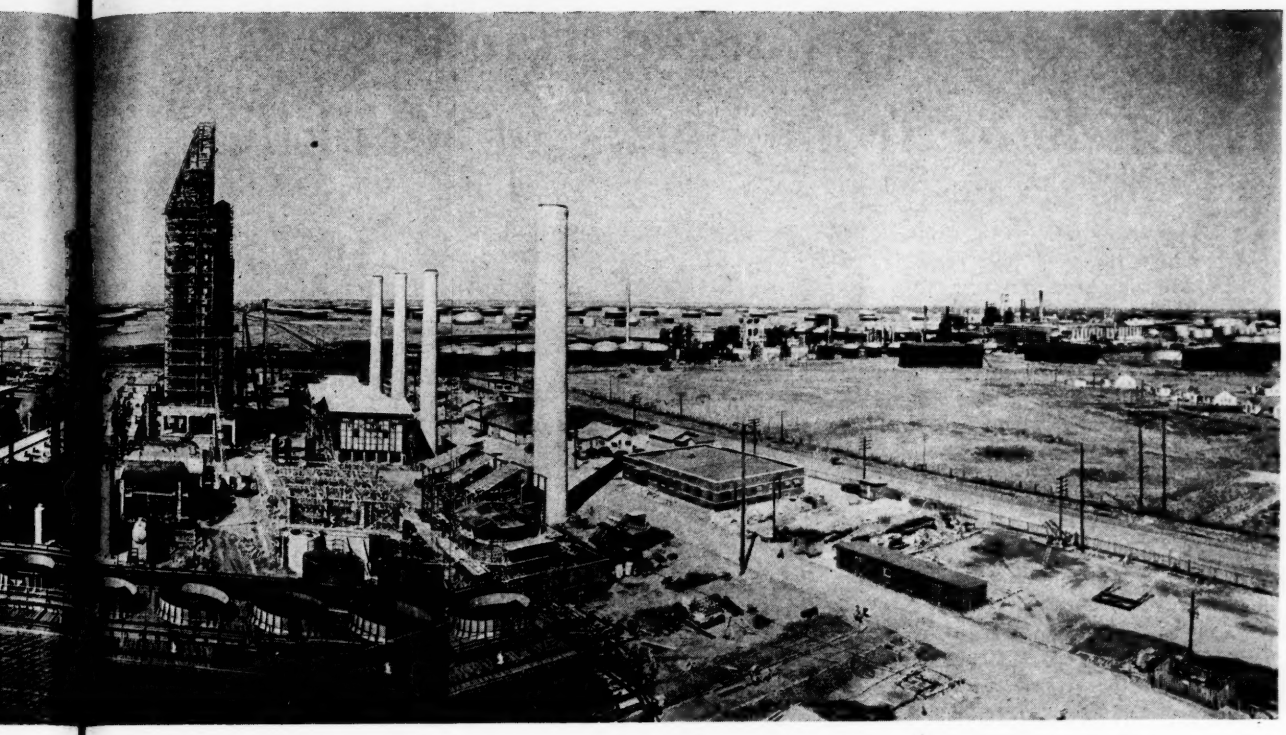


Petroleum Output Rising, Secretary Ickes Announces

PETROLEUM Administrator Ickes has announced that a record production rate of 4,694,200 barrels per day of all petroleum liquids has been certified to the various oil-producing states for December, 1943. This figure represents a net increase of 58,500 barrels per day over the total rate certified for production during November, 1943.

With the exception of the Eastern States (PAW District 1), where a slight decrease in the rate certified was made to conform with the productive capacity of oil fields in that area, the rate certified for each district showed a net increase.

Explaining the upward revisions in the rates certified for all districts except District 1, Administrator Ickes said:

"It appears that the decline in productive capacity for many of the larger unrestricted fields in Illinois and Oklahoma has begun to level out noticeably. As a result of the arrested decline in productive capacity for these larger unrestricted fields in these two States, together with the development of important new reserves in Oklahoma, our certified production rates for the Midwest (District 2) have been increased to conform as nearly as possible with anticipated actual production.

"The net increase in the Southwest (District 3) is attributable entirely to Texas, where measures promulgated by the Texas Railroad Commission in the interest of preventing physical waste in the East Texas field have made it possible to increase oil withdrawals as a result of a sharp decrease in water production.

"Additional productive capacity in the Rocky Mountain States (District 4) and the Pacific Coast States (District 5) has been made available as a result of new drilling and adjustments of production rates for several important fields."

$12,000,000 Gasoline Plant Slated for Early Completion

CONTINENTAL Oil Company's 100-octane plant, which has been designed to manufacture approximately 5,000 barrels of high-test aviation gasoline daily exclusively for the war effort, has been scheduled for completion by January 1, 1944, it was recently announced by C. R. Loehrke, superintendent for the Lummus Company, contract builders of the plant. Cost of the project will approximate $12,000,000, he said.

In disclosing the plant capacity, Mr. Loehrke said it will "make enough aviation gasoline annually for 100 Flying Fortresses to make 681 combat missions of 700 miles each from North Africa to Berlin —carrying enough two-ton, block-busting bombs to blast most of Germany off the map—with maybe a little left over for a few surprise parties in Tokyo!"

The estimate of bomber missions is based on the fact that the 100-octane plant's capacity of 5,000 barrels daily, working 360 days a year, will have an annual yield of 75,600,000 gallons (42 gallons to the barrel). A Flying Fortress requires a fill of 1,110 gallons for a 700-mile flight.

Although construction work on the plant was started early in August 1942, no detailed publicity on the project has been permitted

(*Continued on page* 51)

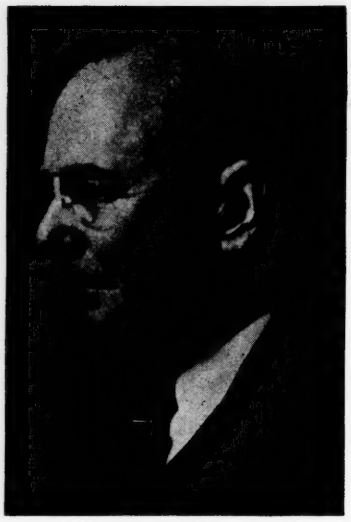
Mechanical Material Handlers Lift Burdens from Backs of Mankind

MANY industries—from the producers of such bulk products as firebrick and refactories to the operators of floating canneries on the Alaskan coast—benefit from modern, mobile materials handling equipment developed from the two-wheeled, hand truck used by the railroads and docks back in the early "eighties" to the mechanized units which today not only lift huge burdens from the backs of mankind, but speed such operations to a pace undreamed of a few decades ago.

So, in effect, observed Ezra W. Clark, vice president and general manager of the Clark Tructractor division of the Clark Equipment Co., before the recent semi-annual meeting held at Indianapolis by the American Society of Tool Engineers. To emphasize the tremendous load carried by industrial trucks and tractors in American industry. Mr. Clark said studies made twenty years ago showed the internal freight bill of American factories to be higher than the external freight cost.

In other words, it cost more to move a ton of steel through an automobile plant in the process of production than it did to carry the steel from the mills at Pittsburgh to the plant sidings at Detroit. Speaking of the present, he said that much of the non-productive payroll represents unskilled labor used in the lifting, carrying, placing and storing of material, and that "conversion of this unskilled labor into skilled, productive labor may well form one of the important objectives of a productive engineer."

He cited the brick industry as one which handles rough tonnage of finished products in normal times totaling 75,000,000 tons yearly with forty-five per cent of production costs represented by unskilled labor. Narrowing his subject to one laborer, Mr. Clark said that one man with a wheelbarrow or hand truck can handle a maximum of 700 pounds, but "with power lift and tiering trucks 1,200 bricks, or 3 tons may be easily lifted, carried, and stored by a semi-skilled driver.



Ezra W. Clark

The danger element which makes it necessary to lay out chemical plants with distinct and separate buildings to house the various steps of production also creates the problem of moving the bulk materials and thus involves the use of belts, pipe and gravity conveyors to cope with the situation. The power motor truck can perform the greatest utility by servicing the processes and thus multiply manpower and reduce production costs according to Mr. Clark.

Packers, he said, received their raw material on the hoof, but they ship the finished products out with the aid of modern material handling equipment. Cattle, sheep and hogs move under their own power to the killing stations; the carcasses are transported by tractors and trailers from the refrigerated room to the shipping points, where the canning and wholesale and dealer trade are supplied. "Packing houses," he asserted, "follow old and accepted transportation practices at their main plants, but more modern methods in their branches and distribution places."

Keen competition in canning and food packaging, in Mr. Clark's words, "squeezes out all unnecessary expense and the modern fork truck-pallet method is widely used." Inroads of the armed services on personnel, the seasonable nature of the business and the flight of labor to war plants has created a serious manpower problem in the food industries. He sees a solution in the utilization of power trucks and tractors to increase and conserve manpower sufficiently to meet the demand for the tremendous quantities of food needed to carry on the war.

Interesting facts about Alaskan salmon canning were revealed in the talk. Formerly, much of the labor used in such work in the northwest and especially in Alaska was Japanese. Now, these floating canneries handle their salmon pack with Indian labor and have reduced handling costs by introduction of modern fork trucks, thus making us independent of Japan and Japanese labor for canned salmon.

Continuing on the subject of food preservation, the Tructractor vice president said "let's take a peek into some typical canning operations. Fruits and vegetables are transported to the canneries by high-powered highway trucks, sometimes being tiered high in temporary storage for additional ripening before they are moved to kettles by fork-trucks. Market ripe fruits and vegetables are processed the same day they are received, a fact made possible by continuous use of industrial trucks. Other steps through to the finished product are similarly handled.

The railroads, Mr. Clark pointed out, have led the procession in primary application of powered material-handling units—first in

(*Continued on page 52*)

Norfolk & Western Employees Get Together by Radio

A SYSTEM-WIDE radio "get-together" of 23,000 Norfolk and Western Railway employees over 19 stations in six states, was held November 15, when W. J. Jenks, N. & W. president, gave an over-all picture of the accomplishments of the railway's Roanoke (Va.) shops since the outbreak of war in Europe in 1939.

Above—W. J. Jenks, president of Norfolk and Western Railway, discussing accomplishments of his company's Roanoke shops with Tom Slater, special events director of Mutual Broadcasting system, during the special broadcast to N. & W. employes over nineteen radio stations.

Below—Heavy repairs were explained to radio listeners during the Norfolk & Western broadcast. Machinist Russell Moon and Announcer Tom Slater are pictured inspecting flue repairs.

Mr. Jenks paid tribute to the "brains, brawn and skill" of Norfolk and Western shop forces—"the men behind the men behind the throttle"—when he said their accomplishments included the design and construction of 52 new locomotives, complete modernization of 19 others, and heavy repairs to 1,444 more locomotives; heavy repairs to 20,550 coal cars, and the complete overhauling of 85 locomotives of other railroads.

He proudly pointed out in his interview with Tom Slater, director of special events for the Mutual Broadcasting System, who conducted the program, that shop forces are contributing directly to the war effort by producing a large volume of war materiel.

That the Norfolk and Western has been able to handle an unprecedented volume of wartime traffic, with 412 fewer locomotives than in World War I, was attributed by Mr. Jenks to the all-out efforts of N. & W. employees, the cooperation of shippers and receivers of freight, the military authorities and the Office of Defense Transportation.

In addition, the rail executive said that "the locomotives we are building now are better designed, larger, more powerful, more efficient and faster, and operate more miles without needing repairs; our shop facilities and methods of building and maintaining locomotives and other equipment are more extensive and modern, enabling us to keep in good repair, and in service, practically all locomotives and cars, which was not the case during the first World War."

Preceding Mr. Jenks' interview, several employees of the N. & W.'s Roanoke Shops described the activities and methods used in various departments of the shops to keep the railway's equipment in top-notch shape to move heavy wartime loads.

The 30-minute broadcast was the third in a series of wartime railroad "meetings," which are supplanting for the duration the employees' annual system-wide Better Service conferences.

Right—Descriptions of forging operations and car repairs were also part of the November 15 broadcast. In the upper view E. H. Gibson, leader of a forging crew is explaining how a massive steam hammer works. At the bottom is Frank Hensley, car repair welder, who told how 16 cars are repaired daily by assembly line methods.

Southern Industrial Expansion during November

ALABAMA

BIRMINGHAM—warehouse—Marbury & Boriss Construction Co., Birmingham, has contract for warehouse for Howard Yielding, 10th Ave. and 22nd St.; $16,000.

BIRMINGHAM—plant—J. F. Holly, Birmingham, has contract at $102,819 for manufacturing plant for Rheem Manufacturing Co.; D. O. Whilldin, Archt., Empire Bldg., Birmingham.

FOLEY—ice plant—Gulf Ice & Cold Storage Co., E. B. Sparkman, starting work on 25-ton capacity ice plant; cost $35,000; owner builds.

GADSDEN—tire factory—Goodyear Tire & Rubber Co., Akron, O., construct tire plant; cost several million dollars; Robert & Co., Archts., Bona Allen Bldg., Atlanta, Ga.; following are prospective estimators: Rust Engineering Co., Dunn Construction Co., both Birmingham, Ala.; George A. Fuller Co., Washington, D. C. and New York; A. K. Adams Co., Atlanta, Ga.; Batson-Cook Co., West Point, Ga.; Hunkin-Conkey Construction Co., 1740 E. 12th St., Cleveland, Ohio. George A. Fuller Co., New York, general contractor.

JEFFERSON COUNTY—shop building—Ralph A. Smallman, 1109 Fifth Ave., S., Birmingham, has contract for 1-story shop building; Tennessee Coal, Iron & Railroad Co., Birmingham, owners.

ARKANSAS

LITTLE ROCK — plant — Southwest Handle & Manufacturing Co., P. O. Box 2339 erecting plant for manufacture of tool handles; foot of E. 14th St.; 2 buildings and office; concrete hollow tile; conc. floors; framing and comp. roof; cost of buildings, $12,000 of equipment, $20,000; work by company's forces; F. J. Venner, Constr. Engr.; Fagan Electric Co., has contract for electric light and power; Williams Plumbing Co., for plumbing; Bill Clark for walls.

DISTRICT OF COLUMBIA

WASHINGTON—building—U. S. News Publishing Corp., 1239 24th St., N. W., let contract to Davis, Wick, Rosengarten Co., Metropolitan National Bank Bldg. for $60,000 program to include repairs, alteration and an office building; Porter & Lockie, Archts., Metropolitan Bank Bldg.

FLORIDA

Plant—United States Sugar Corp., granted permission by Cabinet, Tallahassee, to lay pipe line from Clewiston to 6 miles into Lake Okeechobee; pipeline to be used in operation of a $3,500,000 starch plant, construction of which is under consideration, using sweet potatoes.

KENTUCKY

Plant facilities—Defense Plant Corp., granted additional funds to Curtiss-Wright Corp., Buffalo, New York, for additional plant facilities; cost $2,400,000.

LEXINGTON—shirt plant—Cluett, Peabody and Co., Inc., installing machinery for Arrow shirt factory at 508 W. Main St.

LOUISVILLE—equipment—Defense Plant Corp. increased contract with Tube Turns, Inc. to provide additional equipment for plant in Kentucky, approximately $735,000.

LOUISIANA

Additional plant facilities—Defense Plant Corp. has increased its contract with Standard Oil Co. of Louisiana, $125,000 for additional plant facilities.

Pipe line—United Gas Pipe Line Co., Shreveport, has contracted with Whitaker Pipe Line Co., Ltd., Fort Worth, Tex., for additional facilities in Terrebonne Parish, consisting of 20 miles of 12-in. line from DeLarge Field in south Louisiana to company's pipe line from Lirette Field in south Louisiana to Mobile, Ala.; also contracted with same company for laying 18-mile of 16-in. line from Raceland to St. Rose, La., including a 12-in. submarine crossing of the Mississippi River near St. Rose; other projects recently contracted on which work will begin shortly are: Approximately 7 miles of 4-in. and approximately 10 miles of 6-in. to connect the North and South Elton gas fields to company's Iowa-Marksville 6-in. line, in Jefferson Davis and Allen Parishes, La., contracted by L. E. Farley and B. & M. Construction Co., of Shreveport, and approximately 12 miles of 12-in. loop line on company's Katy-Satsuma Transmission line in Harris County, Texas, contract by Sharman & Allen of Houston, Tex.; recently completed a 22-mile, 16-in. and 14-in. loop line extending west from Gulfport, Mississippi, in Harrison and Hancock counties, on pipe line from Lirette Field, La. to Mobile, Ala.; work was handled by L. E. Farley and B. & M. Construction Co. of Shreveport.

BATON ROUGE—plant—Louisiana Agricultural Supply Co., Inc., W. F. Williamson, President. 1175 Chickasaw Road, awaiting WPB approval for the rebuilding of burned plant; $50,000; equipment $15,000; B. Ransom, Baton Rouge, Construction Engineer; Atlantic Utility Works, East Point, will furnish equipment.

MARYLAND

BALTIMORE—wash room, etc.—Lacchi Construction Co., 337 St. Paul St. has contract for wash room and shop toilets for Maryland Drydock Co., brick and rein. conc.; J. E. Greiner Co., Engr., 1201 St. Paul St.

FAIRFIELD—motor generator building—Cummins Construction Corp., 803 Cathedral St., has contract for motor generator building and machinists', for Bethlehem-Fairfield Shipyard, Inc.; private plans.

MISSISSIPPI

MAGNOLIA—cotton oil mill—Magnolia Cotton Oil Co., George E. Covington, Mgr., rebuild main mill building, recently burned.

MISSOURI

KANSAS CITY — expansion — Berkowitz Envelope Co., will change name to Tenison Envelope Corporation; has post war expansion plans.

MALDEN—ice storage plant—Malden Ice & Fuel Co., has foundation underway on ice storage plant; Gray & Pauley, Archts., 3800 West Pine Blvd., St. Louis.

ST. LOUIS—repairs—Wendell Shasserre, 5965 Wells, submitted low bid for repairs and alterations to ice cream plant and offices, 3912 Easton Avenue, for Chapman Ice Cream Co.; Ernest T. Friton, Security Building, Architect.

ST. LOUIS—plant—St. Louis Macaroni Manufacturing Co., Inc., 5125 Bischof Ave., acquired site at 5100 Southwest Ave. for erection of $250,000 plant, post-war project.

ST. LOUIS—building—General Elevator Engineering Co., 2329 Pine St. acquired building 1210 S. Eighth St.; will remodel and occupy.

ST. LOUIS—alteration—Bumiller & Meyersieck, 3407½ S. Jefferson Ave., has contract for office alterations to building, 2020 N. Broadway, for Atlas Enameling Co.; Raymond Burns, Archt., 55 Hygate Rd., Clayton.

ST. LOUIS—service building—Gamble Construction Co., 620 Chestnut St., has contract for garage and service building alterations, 3720 Laclede Ave., for Grand Leader Realty Co., 7th and Washington Sts.; Klipstein & Rathmann, Archts., 316 N. 8th St.

SPRINGFIELD—remodeling — Producers Produce Co. has permit for remodeling in candling and egg breaking room; cost $50,000.

NORTH CAROLINA

CHARLOTTE—building—Witt Tire Co., Sterling B. Carmichael, 110 E. 7th St., will erect building, S. Tryon St.

CHARLOTTE—building—P. L. Abernathy and E. R. McHenry, acquired a lot 150 by 170 feet on Statesville Avenue; will erect brick and concrete building for A. and M. Farm Equipment business; $25,000.

CHARLOTTE—building—Arnold, Hoffman & Co., Inc., plans operating a manufacturing plant; acquired building on North Tryon Street; local establishment to be patterned after the home plant in Dighton, Mass.

CHARLOTTE—building—H. P. Swinson of the Swinson Food Products Co., acquired the lot at the northwest corner of South Church and West Stonewall Streets; plans to build there a modern building consisting of stores on the first floor and recreation rooms for the use of employes.

GASTONIA—freeze locker plant—Gaston Food Processing Co., George Poston, Pres., starting work on freeze-locker plant; have building on South York St.; will enlarge; install 300 lockers; approval of WPB granted for priority of materials.

SPENCER—boiler house—Blythe & Isenhour, Charlotte, has contract for boiler house for Southern Railway Co., Washington, D. C.

TENNESSEE

ALCOA—merger—Stockholders of Aluminum Co. of America approved an increase in company's authorized common stock from 1,500,000 shares to 7,500,000 shares; on November 12 stockholders will vote on a plan to merge Aluminum Manufacturers, Inc. into the Aluminum Co. of America.

KNOXVILLE—factory — Herman Wynn, Knoxville, construct a 3-story brick building; 45,000 square feet.

MEMPHIS—manufacturing building—S. & W. Construction Co., Memphis, has contract for the construction of manufacturing building for Firestone Tire & Rubber Co., c/o Joe E. Davis, vice president; work to start at once.

TEXAS

Pipe line — Williams Brothers Corp. of Houston and Tulsa, Okla., have contract for 612 miles of gas pipe line in Texas, Louisiana, Mississippi and Tennessee; Brown & Root, Inc., of Houston, and W. E. Callahan Construction Co. of Dallas, contract for 120 miles in Texas; N. A. Saigh Construction Co. of Beaumont has contract for 120 miles in Texas; Bechtel-Dempsey-Price Corp. of Bartlesville, Okla., has contract for 612 miles in Texas, Louisiana, Mississippi and Tennessee; work is in connection with laying of a 1188-mile gas pipe line from Corpus Christi to West Virginia at a cost of approximately $13,000,000; Tennessee Gas and Transmission Co., Gardner Symonds, President, and Chicago Corp., Gardner Symonds, vice president, which company controls the Tennessee Gas are owners; work on the line is scheduled to begin in two weeks; priority rating for the pipe line, which will be built as a war measure, is assured; approximately $15,000,000 addition will be expended for pipe and material; contract previously noted awarded to A. O. Smith Corporation of Houston and Milwaukee, Wis. for 900 miles of pipe and to National Tool Co. of Lorain, Ohio, for 300 miles of pipe; all valve assemblies will be fabricated in Houston shops and materials for highway and railroad crossings will be fabricated by A. O. Smith Corp. in Houston's Sheffield steel plant; first section of the pipe line, 120 miles from Corpus Christi to Edna, will be built by Williams Brothers; section from Edna to Cleveland, 120 miles by N. A. Saigh Construction Co.; 120 miles from Cleveland to Sabine by Brown & Root and W. E. Callahan Construction Co.; 174 miles in Louisiana by Williams Brothers; 32 miles in Arkansas by Williams

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Next Job for Institutional Advertising

By
FRED ELDEAN
Assistant Director of Public Relations
General Motors Corporation

AS a free press expresses sensitivity to the public, so a free industry is responsive to the public in serving products to the people. A manufacturer places a product on the market and gets a referendum from the people. The people in buying or not buying vote for or against the product.

A free people expressing themselves in a free market, with an industry competing to serve them, brought the highest standard of living in the world. The producers of washing machines, refrigerators, radios, automobiles and countless other products did a good job in selling their products. They did more than that and the advertising end of the newspaper business helped them.

Advertising these played an important part in the selling process that expanded factories and increased and bettered techniques of mass or quantity production. This process went all over America. Newspapers and magazines carried advertisements that brought a vision to the American people of more and better things that make up a high standard of living. Beyond the vision, the advertisements persuaded people to buy these things. All over America people bought vacuum cleaners and other products. All over America factories and technology were expanded to satisfy these demands. This developed a tremendous plant, skilled workmen, know-how and management that produced top quality things in enormous volume. Now in the war, abroad and at home, they are saying, "Thank God for America's industrial facilities." Where would we have been in this war without the great productive mechanism we created? Behind this were the advertisements and the boys who sold the vacuum cleaners. Thank God for them too.

But the boys selling vacuum cleaners were too busy selling them to do anything else. The producer figured that he had a big job in producing alone. He thought that if he produced a good product and sold it to the public in large quantities, that as he got out more and better things for more people in more places at generally lower costs, he was doing all that was necessary. But suddenly he was struck with something which put him in a daze. He had been unaware of something which had been gradually developing for years. Knowledge of the product and interest in it on the part of the public had been so great that it practically obscured the process by which it was produced. The public did know something about the factory and the machines that produced these wonderful things. But the public appeared to know little about the industrial economy underlying the product, the machine and the factory.

The public did not understand the producer. It confused money and wealth. A turn in the economic cycle with unemployment and distress brought charges beating down on the producer as he struggled to keep his business and head above water. As he tried to concentrate on keeping his business from going under, angry wasp-like charges struck at him. "You over-produced." He was stunned and bewildered.

He was accused of making too much profit, of making any profit. "Profits are un-Christian, and the profit-motive is the tool of Satan" was charged. Here obviously was something the producer did not understand. "We should abolish the profit-motive and work for the Service State," some cried.

The producer was geared to producing and not to talking, Polemics might be meat for a politician but it was poison for the producer. He was at a great disadvantage. This was something new and he was an amateur. He struck back but he was both confused and inept. He took on in debate the fellow who said people ought to work for the Service State by replying that people aren't idealists; they are realists and they have to have an incentive and that's what the profit motive is. He was countered by the argument that people *ought* to be idealists, and so he was caught up in a cycle of argument that got him nowhere.

It also has another and vital function. It serves as a prophylactic against waste. It is a sort of a sulfanilamide circulating in the industrial economy to overcome the disease of waste. Take the profit motive out of the industrial economy and what would you substitute for it as an eliminator of waste?

We know that government operating without the profit motive has a very low coefficient of ability to throw off waste. The political process certainly isn't conducive to the elimination of waste. In some of the highly centralized governments they use a purge process but drastic as that is it still does not seem to work.

Serving in its function of eliminating waste the profit motive instead of being a scourge is one of mankind's great and beneficent aids for which we should be praising Allah with reverence and appreciation.

Why can't we sell the company as we sell the product? Why can't we sell what the company stands for and how the industrial economy functions. If getting the company across to the public is viewed as a selling job then we would use the traditional technique and procedures of selling.

For example, we know in getting a tangible product across to the public it is necessary to have a continuity in the campaign. One swallow does not make a summer. In product advertising we do not run a single insertion and then quit. We keep steadily repeating until we have a penetration with public acceptance. But do we do that in institutional advertising? Sometimes, yes. Frequently an advertiser gives only a single exposure to an idea he wants to get across. If he does not do that he jumps around copywise like a jitterbug and the public probably has a confused impression if it has any focus at all. Instead of this we would have the same continuity in our institutional advertising as we have repetition in our product advertising.

We would get it down to the interests of the public rather than present it in terms of the advertiser. We would add it all up in terms of the social contribution or how the public or individual members benefit. The self-interest of the audience would be the point of approach.

After all, who made the vacuum cleaners—government or industry?

As in other things institutional advertising begins at home. Your local companies and institutions constitute a substantial market. That is if they view institutional advertising as something vastly more important than merely keeping their name before the public.

Beyond selling his own company the advertiser can sell the free American economy. He can sell in terms that the public can understand. He can sell it in terms of how it affects the people. Some might approach it in the ultimate terms of the consumer. Putting it baldly some might say that when everything is said and done the question of the free American economy all winds up into one issue: "Rationing now, yes, but how would you like to be rationed the rest of your life?"

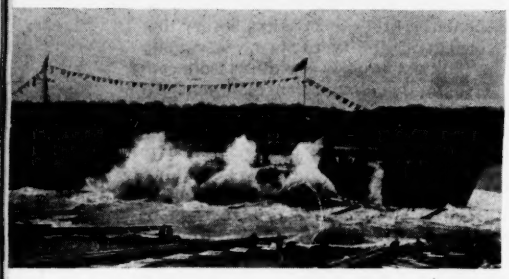
Actually, there is no such thing as a planned economy. It is, however, a fine-sounding phrase. Both planning and economy are good words. Planned econ-

(Continued on page 50)

Above—The Author

Manufacturer's News

ANOTHER LST LAUNCHED



Another LST, ocean-going tank landing ship, which was launched on November 9, 1943, at the Seneca, Illinois yard operated by the Shipbuilding Division of the Chicago Bridge & Iron Co. Hulls of these ships are built largely from prefabricated sections shipped from the company's plants at Birmingham, Chicago and Greenville, Pa. The ships are completely fitted out before launching.

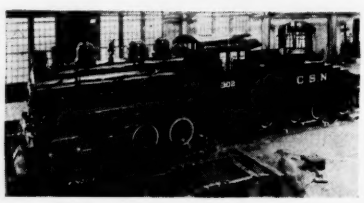
Pittsburgh Glass Changes

Several personnel changes in the Pittsburgh Plate Glass Company have been announced by H. B. Higgins, executive vice president of the Company. W. S. Dunning, formerly manager of the Richmond warehouse, and C. N. Prouty, manager of the New Haven warehouse, have been appointed special representatives, aircraft sales, glass division, with headquarters at the Company's general office, Pittsbuurgh, Pa. J. H. Spivey, manager of the Savannah, Ga., warehouse becomes manager at Richmond succeeding Mr. Dunning; A. O. Cody, travelling auditor, general office, is new manager at Savannah. H. M. Byrnes, manager at the Bronx warehouse has been appointed manager at New Haven, succeeding Mr. Prouty; F. A. Macaulay, formerly Bronx sales representative, succeeds Mr. Byrnes as manager.

Brazil Steel Mill Orders Porter Engines

The contract for locomotives for South America's first complete steel mill, in the State of Rio de Janeiro, Brazil, is being executed by H. K. Porter Co., Inc., Pittsburgh, Pa., T. M. Evans, president, announces. Several of the locomotives, he said, have been shipped. Nine steam engines were included in the order awarded by Arthur G. McKee Co., Cleveland, O., Prime contractor, on behalf of National Steel Co. of Brazil. Two are 80-ton eight wheelers with 51-ton tenders; four are 60-ton six wheelers with 35-ton tenders; and three are 50 tons with four wheels and side tanks. Unusually large firebox and grate area, with fire bars, are provided to facilitate use of the lowheat-value Brazilian coal. The locomotives are built for a 63-inch gauge, 6½ inches wider than the American standard.

Below—One of nine locomotives being built for National Steel Company of Brazil by H. K. Porter Co., Inc., of Pittsburgh, Pa., under contract with Arthur G. McKee Co., Cleveland, Ohio. Several types are being built. The one shown is a six-wheel switching engine of 60 tons with 35-ton tender. It is 63-inch gauge and has an unusually large firebox and grate area to accommodate low heat value Brazilian coal.



Army-Navy "E" Awarded To Ransome Machinery

Presentation of the Army-Navy "E" Pennant "for outstanding war production" to the employees and management of Ransome Machinery Company, Dunellen, New Jersey, a subsidiary of Worthington Pump and Machinery Corporation, by Lieut. Colonel Austin D. Smith, U. S. Army Corps of Engineers. Walter Muller, president of the company and Leonard D'Amelio, representing employees, jointly accepted the "E" Award.

The award to Ransome was the eleventh of the Navy "E," Army-Navy "E" and Maritime "M" Awards won by plants of the Worthington Corporation.

Ransome concrete mixers are used throughout the world in building air bases, gun implacements, and other important concrete construction.

The company's welding positioners play vital roles in Navy shipyards and repair bases.

Ransome road pavers also perform essential functions in construction of air base runways and access roads.

Rolling Mill Executive to Serve On Labor Board

R. G. Adair, assistant director of personal relations, of the American Rolling Mill Company, will serve on the staff of the industrial members of the War Labor Board, in Washington, D. C. Mr. Adair, who has had broad experience in the industrial relations field, accepted this new post at the request of the War Labor Board's industrial members. Formerly assistant manager of Armco's Ashland division, he was recently appointed Assistant Director of Personal Relations for the entire company. After his work in Washington is completed he will assume that position and his headquaurters will be located in the Armco General Office, in Middletown, Ohio. Joining Armco in 1916 as a laborer in the Middletown plant, he became a foreman and then entered accident prevention work. After serving in World War I he returned to Armco as safety director. In 1930, Adair was appointed assistant to the manager of Armco's Butler, Pennsylvania, division and in 1939 became assistant manager at Ashland.

New Roller Chain Handbook

Baldwin Duckworth, Division of Chain Belt Co., are now announcing the issuance of their Engineering Handbook No. 67, entitled "Baldwin Roller Chain Belts for Aviation." The handbook covers completely the design of machine finished roller chain and the application of roller chains to aircraft controls. The "Accessories" section of the book gives information concerning special terminals and connectors which are used with roller chain in aircraft assemblies. Aircraft standards as established by the Army and Navyy have been followed, and the company expects that they will shortly have the approval of N. A. S. Requests for the book should be directed to Baldwin-Duckworth, Aviation Division, 369 Plainfield Street, Springfield, Mass.

Plywood Division Moves

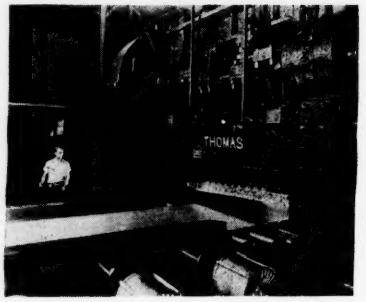
The Weldwood plastic glue department of United States Plywood Corp., has moved its headquarters from 103 Park Avenue, to the building the Corporation recently purchased at 55 West 44th Street, New York City. The Glue Department is the first division of the Corporation to move into the building, which ultimately will house all the New York offices of U. S. Plywood. In its new quarters the Glue Department, according to its manager, W. Robert Goepel, will occupy double the space of its Park Avenue office.

E. G. Plowman Appointed U. S. Steel Vice President

Benjamin F. Fairless, President, U. S. Steel Corporation Subsidiaries, Washington, D. C., announced the appointed of E. G. Plowman as Vice President in Charge of Traffic for United States Steel Corporation of Delaware, a newly created position. Mr. Plowman will assume his new duties on January 1, 1944.

The object of this new position is to permit the traffic matters of the manufacturing subsidiaries to be more closely coordinated.

Mr. Plowman has been Traffic Manager of Colorado Fuel and Iron Company since 1937. He graduated from Dartmouth College in 1921 and received a PHD degree from the University of Chicago in 1937.

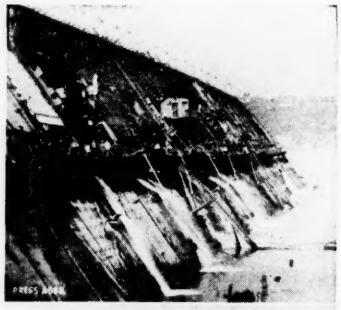


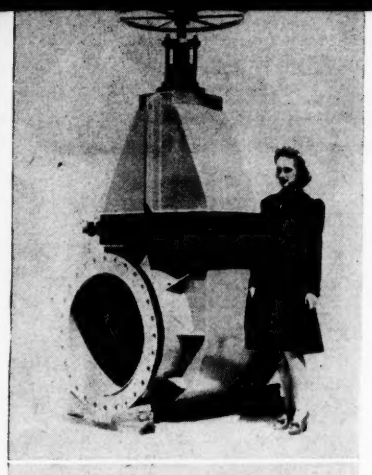
Above—A worker at the electrical controls halts a plate of aluminum beneath a high speed shearing knife in one of the huge new fabricating plants of Aluminum Company of America. The rolls are conical so that the plate makes contact only along the edges to avoid scratching the highly polished surface. These 1-1/2-inch shears yere manufactured by Thomas Machine Manufacturing Co., Pittsburgh, Pa. Thomas shear installations in Alcoa plants include shears up to 3 inch capacity—among the most powerful plate shears ever used for this type of work.

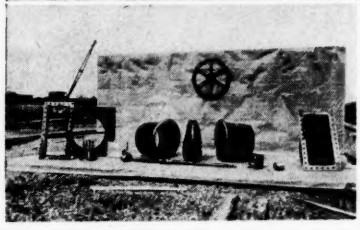
C M C Centrifugals on Normandie Salvage Project

(see pictures below)

More than 40 big C M C 10-inch centrifugal pumps played an important job in salvaging the U. S. S. Lafayette, former French liner Normandie. These 10-inch pumps made by Construction Machinery Co., Waterloo, Iowa, handled the greater volume of the 100,000 tons of water pumped from the hull of the ship. Other centrifugal pumps in smaller sizes were also employed on the job. The full story of the salvaging of the U. S. S. Lafayette will go down as a major feat of World War II and it is with pride that the makers of the C M C centrifugal pumps can point to their part in helping the Navy and Merrit-Chapman-Scott Corp. do the job.





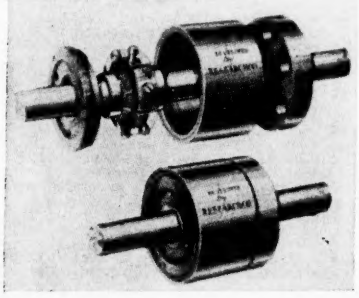


Above—When Fraser-Brace Engineering Co., designers and contractors for the Keystone Ordnance Works, Geneva, Pa., found it would require ten months to get delivery of a 30-inch gate valve, officials of the company decided to build one. The illustrations show the finished valve (note its size as compared with Miss Frances Lysle), and the materials from which it was made. Designs were made by H. F. Lenz, of Shenango Construction Co., and J. H. MacLauchlan, of the Fraser-Brace organization. Construction was carried out by steam fitters in the pipe shop under direction of John Hinkle. A section of 30-inch pipe was cut to form the wedge and the ends were used to form a base for the seats and flanges. Steel plates were arc welded to the wedge section to form the gate. The valve stem was turned from two sections of broken shafting and arc welded together. Body and bonnet were formed of steel plate welded together and reinforced by structural shapes. Adjusting nut, stuffing box were also home-made. The entire valve was built in three weeks. Its total height is 9 feet 6 inches; weight approximately 5,000 pounds. (Photos courtesy Hobart Brothers.)

Universal Announces Lubricated Centrifugal Clutch

(illustrated below)

The Amalgamated Engineering & Research Corporation, Chicago, announces a new type of automatically engaging and self-disengaging centrifugal clutch. The clutch can be produced in an unlimited range of sizes and capacities, can serve either as a coupling between shafts or as a driving pulley or gear in a transmission, as well as a starting cushion between power units and driven mechanisms.



This new unit consists of a partially filled oil chamber fitted with a freely rotating hub, which carries a series of movable wedge shaped flyweights. As the hub revolves these weights fly outwardly and engage the internal rims of the outer case binding the hub and shell into a functionally solid pulley or coupling.

This unit works equally well in either direction (hence is reversible) and is "set" to engage or release at a given speed, and to slip in case of overload.

The manufacturer claims that the unit permits the use of smaller engines or motors which start without load, give smooth cushioned application of power, straight line acceleration with resulting saving in operating cost.

Improved Detergent Feed Announced by Mathieson

An improved model of the automatic detergent feeding device for use with dishwashing machines has been developed by the Mathieson Alkali Works, Inc., New York.

The new feeder consists of a container, which can be mounted on any dishwashing machine and is connected to the water supply. In operation, a stream of water, kept constant regardless of changes in the water pressure, trickles over the briquets in the container, forming a solution which meets a stream of clear water in the bottom of the feeder and runs into the wash water.

The rate at which the compound is fed into the wash water is adjusted to suit service conditions by means of a feed regulator, which is set after adjustment by a lock nut. Feeding then continues uniformly whenever the machine is in operation. All that is required of the operator is to put fresh briquets into the container, as needed; there are no hand-operated feeder valves to demand his attention.

This system of feeding, according to the manufacturer, ensures the proper alkalinity of wash water even when machines are operated by inexperienced workers and with a minimum consumption of compound. It eliminates the necessity of throwing powder into the machine or making up stock solutions; and, as the feeder is being constantly washed out with clear water, there is no clogging of any parts.

Glass Company Executive Elected B. & O. Director

John D. Biggers, president of Libbey-Owens Ford Glass Co., has been elected a director of the Baltimore and Ohio Railroad Company. He succeeds the late Joseph E. Widener.

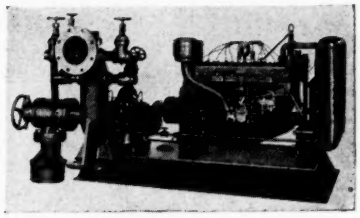
Born in St. Louis in 1888, Mr. Biggers graduated from the University of Michigan in 1909 with A. B. degree. After several years in advertising and promotion work in Detroit he was appointed assistant treasurer of the Owens Bottle Company in 1914 and was its vice president in 1926 when he entered the automobile field as managing director of Dodge Bros., Ltd., in London, England. The next year he was elected vice president of the Graham Bros. Corporation and in 1930 he returned to the glass manufacturing industry as president of the Libbey-Owens Ford Co.

Jenkins Appoints Whitworth

J. Murray Whitworth has been appointed to the Pittsburgh area as a sales representative of Jenkins Bros., manufacturers of valves. He succeeds John J. Simpson who resigned to become general sales manager of Pittsburgh Gage & supply Company. Mr. Whitworth, a graduate of Rhode Island State College, has been connected with the company's Philadelphia branch for the past seven years as a representative in Baltimore, Md., and Harrisburg, Pa. In Pittsburgh he will be associated with L. V. McCune, Jenkins representative there for over 30 years.

Boiler Wall Bulletin

George P. Reintjes Co., heat enclosure manufacturers, has developed a sectionally-supported wall for the upper side wall areas of bent-tube boilers. Proven in actual operation, it is being widely used. It permits freedom of expansion of the drums while maintaining a tight air seal around the drum ends, and is universally applicable on bent tube boilers, either in existing or contemplated installations. The construction is illustrated in Bulletin No. 431.



Fairbanks-Morse Announces Engine-Driven Fire Pumps

(shown above)

With the national fire loss for 1942 amounting to nearly a third of a billion dollars, and with the first seven months of 1943 showing the alarming increase of thirteen percent over the comparable period of 1942, management and labor as well as government agencies are fast recognizing the great danger lurking in a condition of this kind. And the tragedy of such losses as opposed to the losses directly traceable to enemy action is that the great majority of them are preventable.

Most factories and municipalities are cognizant of the importance of protection against fire and consequently suitable fire pumps operated either electrically or by steam are provided. But if, because of some act of God, sabotage or other cause beyond control, the electric power or steam pressure is not available, a standby unit operated by a gasoline engine becomes an important adjunct to the safety of the factory or community.

With this in mind, Fairbanks, Morse & Co. have now announced a new line of gasoline engine-driven fire pump units in capacities of 500, 750 and 1,000 gallons per minute.

Some of the features claimed by the manufacturer are the provision of fire protection if electric power or steam pressure becomes unavailable and an emergency standby protection to supplement electric motor driven or steam turbine driven fire pump units;

2—Quick and reliable starting comparable to automobile starting; 3—Full engine developed horsepower available in a minimum of time; 4—May be equipped for automatic operation starting from pressure switches or thermostat and; 5—Economical cost contrasted with larger marine type engine-driven fire pump units. Two or three or more such standardized units can be installed to advantage to obtain a desired total capacity.

The company also announces that this new line of engine-driven fire pumps fully conforms to the specifications of the National Board of Fire Underwriters and the National Fire Protection Association and carries the approval of the Underwriters laboratories, as well as the inspection department of the Associated Factory Mutual Fire Insurance Co. One of the new units is illustrated here. Bulletin No. 5813-FS fully describing this new line of fire pumps may be had upon request by writing Fairbanks, Morse & Co., 600 S. Michigan Ave., Chicago 5, Illinois.

Theisinger Promoted

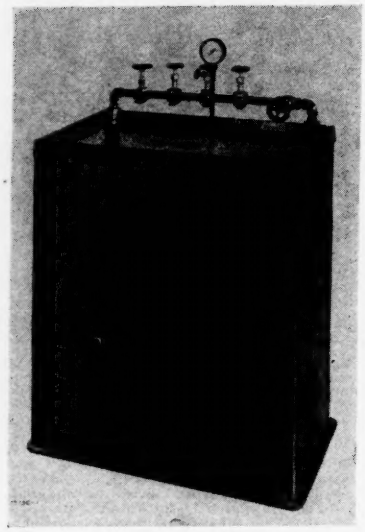
William G. Theisinger, who has been director of welding research at Lukens Steel Co., Coatesville, Pa., since February 1941, has been appointed assistant to vice president, it was announced by D. S. Wolcott, Vice President of the company. Dr. Theisinger will assist Mr. Wolcott in work connected with the manufacture, sale and application of special products such as clad steels. Dr. Theisinger joined Lukens in August, 1935 as Welding and Metallurgical Engineer and has specialized in the handling of technical matters involved in the application, fabrication and sale of the company's products.

Dr. Theisinger was born in April, 1904, in Carlisle, Pa. In 1930 he matriculated at Harvard University, receiving the degree of Bachelor of Science in 1934. In 1935, after completion of post-graduate work at Harvard, he received the degree of Doctor of Science.

Yale and Towne Publishes War Model Catalog

The Yale and Towne Manufacturing Company, Philadelphia Division, recently published a 76-page catalog in order to acquaint industry with their war-standardized line of electric industrial trucks. Contains descriptions of all models, as well as application illustrations, showing many uses.

Copies of this catalog may be secured from the company.



Hydraulic Test Benches

(pictured above)

Two models of test benches lately built by Hydraulic Machinery, Inc., Dearborn, Mich., represent the most simple and most comprehensive designs of this type of equipment. T-116 which may be used for testing short lengths of hose or tubing, cylinders, etc., can be arranged for pressures up to 2,000 pounds. It consists of motor, pump, pressure release valve, pressure shut-off valves, pressure and oil level gauges and the necessary filters and baffles. Dimensions of the base are 21 inches by 38 inches and it is 40 inches high.

T-110 built for the purpose of instruction of hydraulics, as applied to aircraft and machine tools, can be used for testing most anything in the field of hydraulics. Some of the principal features of this unit include oil flow meters tabulated in g.p.m. and variable speed fluid motor used as a power drive for testing various types of pumps. Dimensions: 40 inches deep, 84 inches long, 77 inches high. Working table: 37½ inches high, 29 inches wide, 84 inches long.

Acme Steel Sends Checks

Christmas bonus checks totalling more than $43,000 have been mailed by Acme Steel Co., Chicago, to the 700 men and women now in armed services. Those who were in Acme's employ for more than six months prior to their entry into the Army or Navy, will receive a bonus equivalent to two weeks' salary, or eighty hours' pay at basic hourly rates. Those with less than six months' Acme service will receive a check based on one week's salary, or forty hours' pay at basic hourly rates.

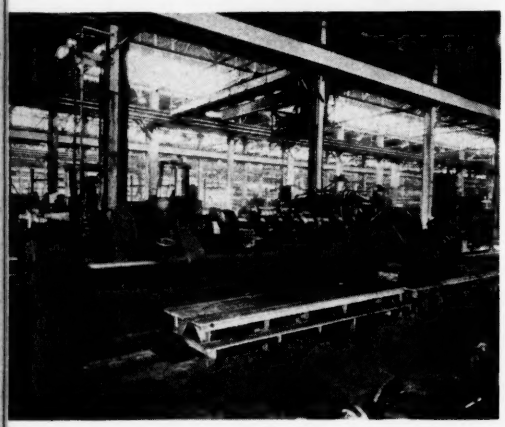
Diagraph-Bradley Ink

A new Diagraph-Bradley stencil ink for marking cartons, wooden boxes, burlap, etc., for shipping has been developed. D-B ink is an improved stencil ink, which is a complete new formula over the old lamp-black and coal oil method, every single drop in the container can be used due to the fact that this

ink does not settle. This new type of ink does not require shaking each time it is used. It dries instantly and requires little pressure in applying to the stencil. Diagraph-Bradley Stencil Machine Corp., 3745 Forest Park Boulevard, St. Louis 8, Missouri, will send a liberal sample of the ink in any standard color.

Above—One of the two 10,000-kilowatt mobile power plants built by General Electric Co. for the Bureau of Yards and Docks of the Navy Department. The plants are designed to supply power quickly wherever required by the Navy. The lower view is of the switchgear car. Rear Admiral B. Moreell, chief of the Yards and Docks Bureau, is in the right background discussing the control panel with L. R. Riggs of the General Electric construction engineering division.

Below—A grinding machine that puts maximum precision into diesel engine crankshafts has just been installed at the Baldwin Locomotive Works, Philadelphia. The unit—largest of its kind in the country—can handle crankshafts up to 216 inches, and has a swing capacity of 40 inches. It is driven by two motors, a 30 hp. wheel drive motor, and a 7½ horsepower traverse drive motor, and will grind crankshafts for engines of from four to 12 cylinders. It was built by the Landis Tool Co., Waynesboro, Pa. The machine is one of several specially-designed pieces of equipment for the new Baldwin diesel shop, which will cover 300,000 square feet, more than twice the floor space now in use. The new shop will concentrate under one roof all operations connected with the manufacture of diesel engines.



Cleveland Tramrails Move Giant Planes

The hundreds of giant C-46 Curtiss Commando Air Transports being turned out in a New York State plant of the Airplane Division of Curtiss-Wright Corp. get their first boost upwards with the new 10-ton Cleveland Tramrail transfer bridge system which was especially designed for this work. In fact, they get several rides during construction. The various fuselage sections, wings, engines, and other parts are brought together by means of the bridges which may be interlocked, enabling the transfer of loads from one bridge to another. The transfer bridges, which are completely motorized, are controlled from the floor by means of pendant push-button stations. The equipment was built by the Cleveland Tramrail Division of The Cleveland Crane & Engineering Co., Wickliffe, Ohio. The airplane in the accompanying illustration, when completed is approximately 76 feet long, with a wingspread of 108 feet and an overall height of 22 feet. Its empty weight when fully equipped is approximately 14 tons.

Admiral Moreell Inspects Mobile Railway Power Plants

The Navy's newest weapon for dealing knockout blows to the enemy—20,000 kilowatts of electric generating capacity in the form of two mobile railway car power plants—was inspected at Schenectady recently by Rear Admiral B. Moreell, chief of the Bureau of Yards and Docks. The two mobile steam-electric power units were built there by the General Electric Company for the Bureau to supply power quickly wherever its many projects may require.

Complete satisfaction with the manner in which the mobile plants had been built was expressed by Admiral Moreell following his inspection of the units with Capt. J. S. Evans, inspector of naval material at Schenectady, and representatives of the General Electric Company. Admiral Moreell was accompanied by his Aide, Lieut. R. M. Hudson, Capt. L. W. Bates, chief of the power division, Bureau of Yards and Docks, and E. S. Lundgren, assistant to Captain Bates.

First of their kind to be built, the new mobile power plants were conceived, initiated, and financed by the Bureau of Yards and Docks, Navy Department. The detailed design was developed by General Electric under the supervision of the Bureau. Each mobile plant consists of a three-car unit comprising a complete 10,000-kw. steam-electric generating station. Although the units in themselves are unique, the apparatus involved is of the same type proved in service in regular central station and industrial power plant installations throughout the country. The units can be hauled over the rails at speeds up to 40 miles per hour.

General Electric engineers estimate that the mobile power plants can be "put on the line" within 24 hours after they are shunted into a siding. The boilers are fired by Bunker C fuel oil, and a sufficient supply is carried in the mobile unit for two hours' operation so that the power can be generated before tank cars are hauled up and connected.

Generation is at 13,800 volts and a transformer is included to provide other voltages which correspond to the voltage of the existing electric distributing system at any naval shore establishment where these units may be needed.

Smith to Cover Southwest For Dow Chemical Co.

Arthur Smith Jr., of the magnesium division of the Dow Chemical Co., has been named head of magnesium sales for the Southwest territory with headquarters in Dow's St. Louis, Missouri office at Second and Madison

Arthur Smith, Jr.

Streets. Mr. Smith will assume his new duties about January 1. In addition to St. Louis, his territory will include Wichita, Kansas City, Tulsa, Dallas, Oklahoma City and Fort Worth. Employed by Dow since 1937, Mr. Smith will be transferred from the Company's Chicago office in the Field Building. He is a graduate of Michigan State College, and holds a bachelor of science degree in chemistry.

Southern Railway President Announces Traffic Changes

Important changes in the traffic department of the Southern Railway System have been announced by E. R. Oliver, vice president in charge of traffic, Washington, D. C.

A. T. Stovall, executive general agent at St. Louis, Mo., is appointed special commercial agent and William J. Wilkins, Eastern traffic manager at New York, will be transferred to St. Louis with the title of Western traffic manager.

Robert N. Woodall, assistant freight traffic manager at New Orleans, La., will go to New York as Eastern traffic manager succeeding Mr. Wilkins.

Thomas J. Garner, foreign freight agent at New Orleans, will be promoted to assistant freight traffic manager to succeed Mr. Woodall.

P. W. Jacks, assistant general freight agent at New Orleans will become foreign freight agent succeeding Mr. Garner.

Clyde C. Cox, district freight and passenger agent at Shreveport, La., will be promoted to assistant general freight agent at New Orleans, succeeding Mr. Jacks.

Mr. Stovall, formerly connected with a San Francisco steamship company at Singapore, Hong Kong, and Batavia, Java, entered the service of the Southern Railway System in 1930 as general agent at Havana, Cuba. He held important posts in the company's Freight Traffic Department at Louisville, Ky., and Mobile, Ala., before becoming assistant traffic manager at St. Louis in 1937. He became executive general agent on May 1, 1940.

Mr. Wilkins started with the Southern Railway in 1926 as a student clerk in the Traffic Department at Washington. He was made freight traffic representative at New York on January 1, 1927, and subsequently served as commercial agent and district freight and passenger agent in the railway's New York office. He was transferred to St. Louis in 1938 and became assistant freight traffic manager at Memphis, Tenn., on April 1, 1939. Mr. Wilkins has been Eastern traffic manager at New York since February 1, 1940.

Mr. Woodall's service with the Southern dates from 1922 when he went to work as a messenger in the division freight agent's office at Lynchburg, Va. He was appointed district freight and passenger agent at New York in 1936 and on September 1 1938, was promoted to general Eastern freight agent. He subsequently was appointed general agent at Pittsbuurgh, Pa., and went to New Orleans in 1941 as assistant freight traffic manager.

Mr. Garner first entered the railway's employ in 1908 as a clerk in the Transportation Department at Washington, D. C. He served in World War I as a commissioned officer and returned to the Southern's service in 1920 as secretary to the freight traffic manager at Washington. In 1921, he was appointed freight traffic representative at Lynchburg and six years later, was promoted to commercial agent at Richmond. Mr. Garner was appointed foreign freight agent at New Orleans in December, 1938.

Starting with the railway in 1910, as a clerk in the Freight Traffic Department at Cincinnati, O., Mr. Jacks was promoted to freight traffic representative in 1920 and two years later was transferred to Kansas City in the same capacity. From 1922 until his appointment as assistant general freight agent at New Orleans in 1943, he held important traffic assignments at Denver, Colo., Cincinnati, O., Birmingham, Ala. and Houston, Texas.

Mr. Cox began his railway service as a stenographer-clerk at Chattanooga, Tenn. in 1929. In 1938 he went to Winston-Salem, N. C., as chief clerk to the division freight agent and a year later was promoted to freight traffic representative at that point. He served as commercial agent at New Orleans prior to his assignment as district freight and passenger agent at Shreveport, La., on September 1, 1942.

Peerless Pumps

"Peerless Pumps Serve All War Fronts" is the title of an attractively prepared illustrated catalogue, showing the use of Peerless Pumps for both peace and war uses The book is attractively illustrated with photographs of outstanding achievements of Peerless Pumps serving on the war fronts and normal uses.

Tennessee Oil and Gas Map

The Department of Conservation, State of Tennessee, at Nashville, has just issued a complete revision of their oil and gas map of Middle Tennessee. The text matter is conveniently arranged to show the strategic position of producing horizons in a general columnar section by groupings; a brief history of oil and gas developments in Tennessee. The map shows the pools and table of data, all arranged by Kendall E. Born, Associate Geologist. Copies can be purchased from the Department of Conservation, Walter F. Pond, State Geologist, for twenty-five cents each.

Two New Crusher Bulletins

American Pulverizer Company, St. Louis, Missouri, distributing bulletins on rolling ring crushers and metal turnings crushers. These bulletins are adequately illustrated and are available on request.

Drayer-Hanson Appoints New Field Representative

Drayer & Hanson, Inc., Los Angeles, California, announce the appointment of J. C. Lewis as field representative for Arkansas, Louisiana, Texas and Oklahoma.

This appointment is a part of their general expansion program. Their products are designed for refrigeration, air conditioning and general industrial applications.

Mr. Lewis will make his headquarters in Austin, Texas.

Pipe & Tube Bending Handbook

Practical methods for bending pipe and tubes of copper, brass and related alloys are fully described in a new technical book now being distributed by the Copper & Brass Research Association, of New York City.

Nylon Rope Uses

One of the interesting uses of nylon rope is picking up mail on the fly. A ten-foot hickory pole protrudes from beneath the plane and holds the pickup hook temporarily in position for a "strike" as the pilot swoops low over the ground station. A loop of rope fastened to a bullet-shaped mail container is draped over two standards in the ground so that it can be easily snagged. At the moment of contact, line is paid out from a winch or reel inside the plane, and an automatic brake gradually snubs the line, after which the mail is hauled up by an electric motor. There is a pronounced initial shock because of the inertia of the winch drum which must be set in motion very suddenly. A hydraulic shock absorber was used to offset the effect of this shock, but it has been found that nylon rope for the mail bag loop and the winch line has proved effective.

Davenport Besler Awarded Army-Navy "E" Pennant

Rear Admiral H. G. Taylor recently presented the "E" burgee for quantity and quality of war production. Davenport Besler are producers of well known steam, gasoline and Diesel Davenport Locomotives, castings, forgings and a wide range of machine work.

Tubing Manual Issued

A new illustrated engineering manual (SS-44) on Rex-Flex stainless steel flexible tubing and bellows has just been issued by Chicago Metal Hose Corp., Maywood, Ill. This manual contains much engineering data and specifications not heretofore published. Characteristics of the product are shown in detail, with tables of sizes, weights, wall thicknesses of the various wall forms, together with pressure data, minimum bending radii and a wealth of other detail useful to the engineer. Complete data on fittings is also given, with diagrams and instructions for attaching

fittings, and recommended design procedure for various types of applications. One feature of special interest is the double page spread giving, in chart form, line-loss data on Rex-Flex tubing and elbows. There are many detailed photographs and illustrations of new interest to design, production and maintenance engineers in the 36 pages of this new two-color book.

New Book By Stanley Horn On Lumber Business

"This Fascinating Lumber Business," just published by Bobbs-Merrill ($3.75) from the pen of Stanley F. Horn, longtime editor of the Southern Lumberman, makes good reading for either the man whose business is wood or the average layman who begins it with no other knowledge than the tall tales of Paul Bunyan. "This Fascinating Lumber Business" tells the story of America's most unusual crop—her forests—in a panoramic account of the oldest business in the United States. The first cargo of manufactured goods shipped from this country (1608) was lumber, the same products which Col. F. G. Sherrill of the U. S. Army Engineers calls "the most vital material for the successful prosecution of the war."

The author traces the progression from growing tree to marketable two-by-four, and the average reader learns, probably for the first time, the complex processes of lumbering. The tree is felled for him; transported by tractor, railroad, ox drawn sledge—or in one case by elephants—to the sawmill; emerges a familiar board, ready to be sent to the kiln or air drying plant. The story by no means stops with the production of construction lumber; Mr. Horn touches on a multitude of forest products: turpentine, resin, railroad ties, paper pulp, and plywood.

Steel Products Manual

Steel Products Manual, giving instructions for packaging, marketing and loading methods for steel products for overseas shipments. Instructions approved for the steel industry by the U. S. Treasury Department, Procurement Division, the Army Service Forces and the Navy Department. Many foreign purchasing missions were consulted in the book's preparation.

C. A. Fulton Selected Mining Institute Head

Chester Alan Fulton, president of the Southern Phosphate Corp., Baltimore, has been elected president of the American Institute of Mining and Metallurgical Engineers for 1944.

Institutional Advertising

(*Continued from page* 45)

omy is an abstraction. To be operative someone has to operate it. Government would have to operate it. By that we mean someone holding a political office. He was elected or was appointed by someone who was elected. What we are really talking about is a politically planned economy. We would contribute to clear thinking and sounder conclusions if we were to refer to it as the politically planned economy and never in the abstract sense of a planned economy.

The politically planned economy substitutes for the free decision of the individual a decision by someone who holds a political office. The politically planned economy cannot operate to make individual decisions for each individual. It can be operative only as it places the individuals in a class or classes and makes decisions for them. Immediately sensitivity to the individual is reduced. At first some choices may be left with the individual, but the nature of planning requires that the planners plan. Some broad determinations have to be made. The public can have this or that. The public may say it wants this but not that. This upsets the plans and the next step is to remove the choice from the individual. It is inherent in the politically planned economy that the freedom of choice of the individual be reduced progressively. As decisions become centralized the government becomes insensitive to the individual.

As Democracy requires a free press, a free people require a free market.

The interpretation of the free market is the next job for institutional advertising.

Commando Plane Plant

(*Continued from page* 39)

prise formed from the Turner Construction Co. and the Raymond Concrete Pile Co. The site job, which originally was estimated to take 30 days, was done in eight days, using 1500 workers. When the fill was finished work on the main plant building began over the foundation of piling that already had been driven for the shipyard buildings.

The original contract, which was signed last January, called for conversion of the Michaud shipyard into a government owned airplane plant. The plane contract was for expenditure of $130,000,000 for 1200 Curtiss-Wright C-76 Caravan cargo planes. An additional $30,000,000 was allocated through the Defense Plant Corporation for converting the shipyard into an airplane factory and equipping it for the latter purpose.

Last August as the Higgins facilities were nearing completion the War Department transferred the contract from a wood to a metal plane. Instead of the smaller C-76 plane, the larger Curtiss C-46 Commando is to be manufactured under a new, re-negotiated prime contract. This plane is a cargo transport powered by two 2000-horsepower radial engines. It is designed to carry paratroops, light artillery and freight.

George F. Shelley, senior engineer for the Defense Plant Corporation, was that agency's supervising engineer on the project. Capt. Raymond Schuerman was supervising engineer for the Army.

Officials of Higgins Aircraft, Inc., in addition to Mr. Higgins, are: Frank O. Higgins, vice president and general manager; Col. John H. Jouett, vice president; Morris Gottesman, treasurer, and C. P. Fenner, Jr., secretary.

(S. A. L.)

Record Worker Army Constructing Refineries

THE greatest number of skilled construction workers ever employed in petroleum refinery construction, reaching a peak of 44,000, are completing the forty 100-octane aviation gasoline plants now being built to bring capacity up to the stupendous levels needed to fuel the rapidly-expanding United Nations air forces, according to Petroleum Administrator for War Harold L. Ickes.

The announcement was made coincident with dispatch of a letter congratulatory from the Administrator to each member of the huge army of workers on the job being done and asking continued help to get the plants built and in operation at the earliest possible moment.

Southern Contracts Up

(*Continued from page* 37)

The public building total of $602,305,000 was made up principally of Federal building construction and housing projects. School buildings were but a small factor in the eleven-month total for such work.

Industrial construction speaks for itself, although much of it could be more properly listed as government construction in view of the importance of federal finance agencies in making the funds available for such wartime industrial expansion.

Airport work was the largest component of the public engineering figure of $293,325,000. Leading the several divisions into which the engineering total is tabulated, the airport total of $253,473,000 far overshadowed the $34,622,000 for sewers and water works and $5,230,000 for government electric projects.

Industrial Expansions

(*Continued from page* 44)

Brothers; 97 miles in Mississippi by Williams Brothers; 77 miles in Mississippi by Bechtel-Dempsey-Price Corp.; 189 miles in Tennessee by Williams Brothers and 259 miles in Kentucky by Bechtel-Dempsey-Price; twenty major river crossings will be built by Williams Brothers. Contract was let to Stearns-Roger Manufacturing Co., Denver, Colorado, for seven compressor stations, totaling 58,000 h.p. and a dehydration plant, in connection with gas pipe line company will lay from Corpus Christi, Tex., to Cornwell, West Virginia; 24-in. pipe to be furnished by A. O. Smith Corp. and National Tube Co.; fifty-eight 1000 h.p. compressors will be installed in the seven compressor stations, 27 of which will be furnished by Worthington Pump and Machinery Corp. and 31 by Cooper-Bessemer Corp.

Additional equipment—Defense Plant Corp. closed contract with Lone Star Gas Co., Dallas, for additional equipment at plant in Texas; cost $70,000.

Additional equipment—Defense Plant Corp. granted $100,000 to Lone Star Steele Co., Dallas, for additional equipment at plant in Texas.

Plant—McCrossin Engineering Co., 120 Wall Street, New York, will build and operate a pig iron blast furnace plant and chemical products unit in Texas; Defense Plant Corporation will finance; $3,500,000.

ALAMO—remodeling—Stinson & Lutz, 1921 Austin St., McAllen, remodeling packing plant, 101 E. First St.; owner builds.

CORPUS CHRISTI — building—Whitehurst Co., has contract for building 502 Navigation St. for Continental Oil Co., Driscoll Bldg.; cost $10,000.

EDINBURG—food locker plant—Central Power & Light Co., W. C. Jones, Local Mgr., erect frozen food locker plant, E. Harriman St.; R. Newell Waters, Archt., Weslaco.

FORT WORTH—addition—Consolidated Vultee Aircraft Corp., George J. Newman, Manager, Fort Worth, has started work on a $1,255,000 addition to an experimental building; completion of structure approved by Army Air Forces.

HOUSTON—warehouse—Wald Transfer & Storage Co., having plans prepared by Joseph Finger, Inc., for warehouse, McKinney and Live Oak Sts.; $400,000.

MARSHALL—steel plant—J. N. Laughlin and Julius D. Madaras of Longview, plan conversion of former NYA war training shops into a production center; will operate as Marshall Engineering Co.

McALLEN—remodeling—Reagan Canning Co., C. H. Reagan, 17 N. 22nd St., remodeling building; day labor.

MERCEDES—repairs — Mercedes Citrus Growers repair packing plant; owner builds.

PHARR—remodel—Texas Bloom Fruit & Produce Co., M. H. Lowry, remodeling building 208 Main St.; owner builds.

SAN ANTONIO—addition—Walsh & Burney Co., 928 Flores St., low bidder at $15,483 for plant addition for Gebhardt Chili Powder Co., 112 S. Frio St. to be erected at 1810 S. Laredo St.; Weidner & Co., 317 Frost Bldg., Archt.

WACO—plant—General Tire & Rubber Co., William O'Meil, Pres., Akron, Ohio, will begin construction of $4,000,000 plant in Waco, as soon as architects' plans are approved and buildings material available; plant which will probably be in operation by summer of 1944 will use synthetic rubber produced at company's Baytown plant; occupy 250,000 square feet of floor space; Fred Mayfield, company's development engineer.

VIRGINIA

NORFOLK—plant—Jacob Ruppert Vir-

ginia, Inc., 1639 Third Avenue, New York City, acquired Southern Breweries, Inc., 710 Washington Avenue.

AMPTHILL—expansion — Expansion at Spruance plant at Ampthill, Richmond, for E. I. du Pont de Nemours & Co., Inc., Wilmington, Delaware, is in form of a conversion of ordinary textile rayon equipment to "Cordura" high tenacity rayon for tire cords for the military program; first part of the conversion, designed to produce 14,000,000,000 lbs. per year of "Cordura," was begun about first of June, 1943 and is expected to be in operation by middle of January; this change-over involved no new building construction; second step in the conversion, designed to produce 7,000,000 lbs. of tire rayon per year is just getting under way and is expected to be completed by November or December, 1944; this will involve the addition of three new bays to the chemical building, but for the most part it is a change-over job; engineering contracts for both parts of the program are held by Laburnum Construction Co. of Richmond, Va., and the Riggs, Distler Co. of Baltimore, Md.

WEST VIRGINIA

PRESTON COUNTY—coal mines—Earl Swartzwelder of Albright and Kingwood, has acquired coal mining properties in Preston County, including 29,000 acres of land, mine houses, garages, etc.

World Gold Standard

(*Continued from page* 33)

will so quickly restore the confidence of the public as a true gold standard. No other kind can be made so simple, so easily understood. That means much for the monetary system of a democracy.

Gold Standard Highly Automatic in its Operation

The monetary standard of the future should be highly automatic in its functioning. This does not mean that it should be subject to no management. All currencies are more or less managed. It is a question of degree. Such forms of management, as varying discount rates, open market operations and changing reserve requirements have doubtless come to stay; although

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$12,000,000 Gasoline Plant

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under censorship regulations until the release of such information was authorized recently by Robert P. Patterson, under secretary of war.

The 100-octane plant includes a thermofor catalytic cracking unit for the production of a base gasoline, and an alkylation plant to produce iso-octane. These two products will then be blended with tetraethyl lead and iso-pentane, a product of casinghead gasoline plants, to produce the high-test aviation gasoline.

Central unit is the T. C. C. plant, which towers 234 feet above the surrounding terrain. There are four stacks 125 feet high, and one stack 150 feet high. The iso-pentane tower, which weighs 118 tons, is 11 feet in diameter and 132 feet high, and was shipped to Ponca City in one piece on three railroad flat cars. The plant also includes a control laboratory, rail trackage for simultaneous loading of 30 tank cars, storage for 240,000 barrels of finished products, and a redwood cooling tower for cooling 30,000 gallons of water per minute.

Petroleum Situation

(*Continued from page* 40)

scale to increase, or even to maintain, the daily production, once the reserve capacity to produce has been exhausted. The ability of any oil well to produce decreases with the passage of time. In the course of years, they become what is known as "strippers." About three-fourths of the Nation's 400,000 producing oil wells are of this class.

In 1941 the industry completed 19,195 new oil wells in the United States. In 1942, the effect of various restrictions was felt and the total new oil wells was 10,302. In the first eight months of 1943, the total was 5,998, indicating that fewer oil wells will have been drilled this year than last.

With this decline in the drilling needed to safeguard supply, the demand continues to increase. The Petroleum Administrator for War has asked for the highest production rate in history for December —4,694,200 barrels a day. Of this, 4,425,100 barrels would be crude oil, the other 269,100 barrels natural gasoline, obtained by extraction from natural gas, and what is known as condensate, another field product. The amount asked for is 58,500 barrels daily more than the recommended November rate.

Throughout this year, the production rate for crude oil and other liquid fuel products has kept on increasing. The amount asked for in December is 570,000 barrels daily higher than for January, 1943. This reflects an ever increasing demand. There is no clear-cut picture of what the demand will be in coming months; so many factors are either unpredictable or are matters of military secrecy. The following general statement, however, was made by Don R. Knowlton, Director of Production, Petroleum Administration for War, to a House Committee on September 27:

". . . military demand for petroleum products is reaching unprecedented totals and still larger increases in demand for military purposes are being forecast. Even after allowing for substantial drains upon domestic stocks of crude oil and refined products and even after allowing for full utilization of excess efficient productive capacity, our best estimates indicate that there will be a continuously growing deficiency between domestic production of crude oil and minimum crude oil requirements necessary to meet military and essential civilian and industrial demands. It is estimated that by the final quarter of 1944, the deficiency between domestic production of crude oil and crude oil requirements will total 337,000 barrels daily. Present programs call for this crude oil deficiency to be supplied from foreign sources but, with the unpredictable hazards of submarine warfare and with no assurances that the necessary tankers will be available on a continuing basis, this is not a positive solution to the problem."

Oil producers contend that with a reasonable price rise, which would mean to the "A" card consumer less than five cents a week on his gasoline bill, there would be afforded to the producing industry the margin needed to expand the exploratory campaign for new fields and to do more drilling in proven fields; to repair oil wells and apply known methods of stimulating their production, and to set in motion programs of secondary recovery—the injection of water or natural gas into the producing formations to force more oil into the wells.

The Government's price authorities counter with suggestions of subsidies, which oil men believe would not fit the case at all, which view is shared by the Petroleum Administrator and his staff.

The whole question has been turned over to Congress and there is promise of a vigorous attempt at a solution in the near future.

Mechanical Material Handlers

(*Continued from page* 44)

baggage handling operation then in the storehouse and shops and more recently in the handling of freight. The change in buying practices in the 20's resulted in an increase of less-than-carload freight and development of railroad transfer services. Tractor-trailer and cargo-platform material handling systems were introduced for efficiency in these transfers.

Up until about ten years ago no great improvement in unloading methods and facilities for individual box cars had been developed since the 1880's. A power-driven carloader was designed by Clark forces and introduced in about 1935. This is a telescopic fork truck with the ability to take two tons of freight from a warehouse to the shipping dock and into a freight car and tier to the roof. It enables a driver and two helpers to unload a box car in a matter of minutes, where the operation formerly took a gang of five to seven men hours to do.

Two things, according to Mr. Clark, have been mainly responsible for the distinguished industrial record of the automotive industry. These are increased volume and the elimination of unnecessary, wasteful unskilled labor. Increased values and decreased costs merely serve to emphasize the coordination in moving immense tonnages of freight into and through automobile plants in times of normal production. The Clark carloader was one of the results of studies of the problems of the automotive industry.

"It is in the aviation industry that the greatest effective use has been made of modern, material-handling methods and means," said Mr. Clark. The larger plants, such as Boeing at Seattle, Douglas and Lockheed in California, and their related plants at inland points, all use the fork truck as a part of a plant transport system. "It loads a train of trailers with especially constructed bins and tote boxes in which many items in the process of production are transported from one point in the plant to its next point in the progress of production.

"It is impossible to tell what is in store for the aviation industry in the post-war era," Mr. Clark stated, "but as a believer in the future requirements of the American industrial picture, hazard the opinion that while the character of the planes may change, production will increase when they are built for peace rather than for war."

The armed forces have made greater strides in the proper use of material-handling equipment in two years than industry has made in the last fifteen years, it was pointed out by Mr. Clark. In pre-war years the combined output in industrial truck and tractor manufacturers was approximately 2,500 to 3,000 per year. Now the Clark company builds that many in a month.

When the war started there were probably 25,000 to 30,000 industrial trucks in all American industries, including the armed forces. It is a fair guess that the Army and Navy are now using 75,000 of these towing and burden-bearing industrial haulage vehicles, representing in manpower a supporting supply army of 750,000 men. Mr. Clark assured his listeners that "we have no need to fear the adequacy of the means now available for quick movement of the supplies to support the men now overseas and those destined for this duty."

Mr. Clark closed his talk with the warning that "if we are to endure as a nation in a world of competitive nations, we must make it unpatriotic, disloyal, unpopular for a man or a woman to be unskilled. Industries, schools, colleges, Government must unite in this effort to bring into being in this country a state of society where all men and women are skilled. Then we shall deserve the standard of living that goes with merit.

"We will accomplish this only as we throw off the shackles of all limitations to free enterprise, to free competition, and make available to our youth the finest technical and scientific knowledge and attainment. We must generate pride of artisanship. We must create in the heart of the mechanic the desire to be a good tool designer or tool engineer. There is an inexpressible thrill in the coordination of a trained mind with its trained hands."

Bill Smith Engineman

(*Continued from page* 34)

not been satisfied with what he has learned about the possible perpetuation beyond the war's duration of lend-lease, the draft and rationing. It is explained to him that this continuity may be necessary, so that the world's living standards might be raised.

This threat may be summed up by what a Washington taxi-driver recently said:

"It seems to me that this time they're fixing to make the duration last longer than the war."

Drastic War-Time Restrictions End with Peace

If, in my informed opinion, the danger of indefinite termination of drastic war-time restrictions may become realized through post-war planning, then, on behalf of the Bill Smiths, I will resist to the uttermost.

Proposals have been made to raise the level of world society by equalizing world income. In effect it would necessarily syphon off American income. It is fallacious to make serious drafts against the American standard of living, outside of war, in the attempt to equalize freedom from want, throughout a world containing more than two billion people. The objective is laudable and should meet with the approval of every free American. But the method is consummately unintelligent. It would definitely cripple and degrade the Bill Smiths and their families. It would seriously restrict them, in the future, in sustaining any reasonable standard of social or economic service to themselves and to the world. In order to reach such a desirable objective as world freedom from want, Bill Smith's ability, capacity and enterprise must be greatly enlarged—not impaired.

World Disparity with U. S.

The population of the United States is only six (6) per cent of that of the world. The wealth of the United States is about thirty

(*Continued on page* 54)

There's a Christmas-rush on telephone wires, too

Help keep war-crowded circuits clear on December 24, 25 and 26.

Please use Long Distance only if it is vital.

War needs the wires—even on holidays.

BELL TELEPHONE SYSTEM

Bill Smith Engineman

(*Continued from page* 52)

(30) per cent of that of the world. The income of the United States is about thirty-six (36) per cent of that of the world. To simplify the problem, the United States with thirty-six (36) per cent of the world's income and six (6) per cent of the population has a living standard per capita equivalent to six (6) units of income (36 divided by 6). The rest of the world, with sixty-four (64) per cent of the income and ninety-four (94) per cent of the population, has a per capita standard equal to two-thirds (2/3) unit of income, or on the average one-ninth (1/9) of that of the United States.

In order to establish world equality of income under the management of national and world governments, (which could only be achieved by dictatorship) the United States would be compelled to retain only her per capita share of the total world income, that is, she must reduce her income to six (6) per cent of the total income and must give away in the post-war period, through instrumentalities such as the draft, rationing, lend-lease, and money and credit management, the remaining thirty (30) per cent of the world income which the United States now holds. In this way only, ninety-four (94) per cent of the world population could also receive ninety-four (94) per cent of the world income. This procedure, in theory, would raise the rest of the world to average per capita income of one unit—which is a theoretical gain of fifty (50) per cent from the present average for the world outside the United States! In the process, however, the average citizen of the United States—Bill Smith—would ultimately lose five-sixths (5/6) of his income.

Bill Smith would never subject himself to this trend.

Such a syphoning-off of American income would mean an increase of only $30.00 per year per person outside of the United States,—for example, a bottle of milk a day for each person. It might be a fortune to a Chinese or a dweller in the tropics, but it would be purchased at a price which would mean the utter degradation of the people of the United States as well as a rapid decline in productivity.

Magnitude of U. S. Involvement

To suggest to you the magnitude of this nation's involvement in the affairs of other countries, I quote from the *Bulletin* of the State Department of the United States under date of December 27, 1941, page 589:

"Lend-lease countries cover two-thirds of the earth's surface and contain two-thirds of the population of the world. Up to the present time, the defense of 33 countries, including the British Empire, has been declared vital to the defense of the United States, and steps are being taken to strengthen the defenses of these countries."

Already most of the world outside of the United States and the countries dominated by Germany, Italy and Japan are covered by a plan which commits the United States to indefinite extension of credit and the shipment of all kinds of commodities without hope of repayment. It is further the announced policy of our government to supply our resources in order to "rehabilitate" even the "Axis" countries after they shall have been defeated. That completes one program for world redistribution of American wealth and income. As much as we may approve of this course during the war with its attendant sacrifices, it must not be a policy to be perpetuated after the end of war.

As hopeless as this candid commentary may appear, since it expresses what may threaten us, it offers a warning to the world planners. I am sure, if we reason wisely, with balanced perspective, we will realize that Bill Smith, the average American, is still in charge of our democracy, "with rights so great as to be of infinite worth—so towering in the scale of values—that he has rights even against the State."

However, Bill Smith must now and after victory renew and vigilantly preserve his faith in our system of government and its institutions, which have given him, as he has struggled upward on his own, an ever-increasing standard of living. He must not permit this glorious democracy to become prostituted. His individual responsibility and initiative must still further be advanced. He must avoid at all cost any permanent establishment of a deadening bureaucracy in America which will take away from him the right to manage his own affairs and those of his family.

Bill Smith's Desire Wholesome

I think it would be misinterpreting Bill Smith's attitude as he looks out upon the future of the world, should I not explain that he has a wholesome desire to help other peoples throughout the world to help themselves. He would want to see all other nations equipped as we are, as resourceful as we are, with a standard of living such as we have and with an ability to serve the world. In the post-war period you may depend on him to do his full part with those of other United Nations to produce these results. All of this mutual helpfulness of the nations of the world during a reconstruction period should begin at the roots of the basic needs. Bill Smith would help feed and clothe the needy ones torn by the war, until it is possible for them to care for themselves. The price of peace throughout the world is fully worth a wise and enduring unselfishness. If American intelligence and initiative with those of other nations are freely released to develop the education, the health, the sciences, the industry and the natural resources of all lands, with democratic governments cooperating together, there will be no doubt of an enduring peace.

There are admittedly backward countries which need to draw heavily on Bill Smith's institutions rich in the sciences, education and health. These institutions should be made available to all peoples through a wide distribution of knowledge from vast and ever-growing storehouses. Wealth and income of a people find their sources (1) in education, (2) in the sciences, (3) in their industry and thrift, (4) in the advancement of health, and (5) in their natural resources. The more of such good things that all nations can make available to those who require them, the closer we will get to the spirit of world brotherhood.

World Gold Standard

(*Continued from page* 51)

resort to them has often done more harm than good. At any rate, whatever management we have should be superimposed upon a monetary system that is fundamentally automatic in its operation. Such management as does occur, moreover, in each country, (except possibly in time of war) should be in the hands of the central bank where it can best be kept free from the blighting hand of politics.

The world has had many generations of experience with the operation of a highly automatic gold standard and the fundamental rules of the game are fairly well understood. Stronger resistances against political exploitation are put up by such a gold standard than by any form of governmentally managed-paper-money standard. "We have gold," says an old proverb, "because we cannot trust governments."

Gold As An International Standard

The monetary standard of the future should be a broadly international standard, and gold is the only standard at present that offers any reasonable prospect of becoming an international standard on a large scale. Thanks to recent developments in transportation and communication, by air, water and land, the world will be a much smaller one in the future than it has been in the past. For this reason, as well as others, the demand is becoming increasingly urgent on the part of thinking people, that wasteful economic nationalism be broken down and that trade and finance be permitted to move with a minimum of restrictions across political boundaries. To this end all the leading countries, and as many as possible of the minor ones, should have the same monetary standard, as more than two score of them did have, in gold, prior to the crisis of 1929. Gold makes the strongest case to be the international standard of the future. There is no other metal in the running. The last remnants of the silver standard have practically passed from the stage since World War I and there has been no bimetallism in the world for 70 years. Governmental managed paper money standards, often tried, have been proven to be in practice eminently nationalistic standards and very susceptible to depreciation under the fiscal pressure of governments.

Stability of Gold as a Standard

The international standard of the future should provide the nations of the world with monetary units that have a high degree of stability in value.

Both inflation and deflation are evils to be avoided, of course, a perfectly stable unit of value is unattainable. Gold, although far from being stable when viewed over long periods of time, is usually reasonably stable over short periods, and has been more stable over the past half century than any other monetary metal. It gives promise of continuing to be so in the future. The world's annual production of gold even at its existing high rate is equivalent to only about 4 per

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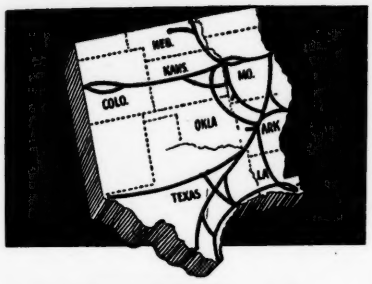

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The Lunkenheimer "N-M-D" Valve illustrated is typical of the simple, rugged, easy-to-maintain construction that distinguishes Lunkenheimer design practice.

Thus maintenance men working with these valves find them easier to keep fit and on the job..find that Lunkenheimer valves will last longer and serve better with less attention and time out for repairs.

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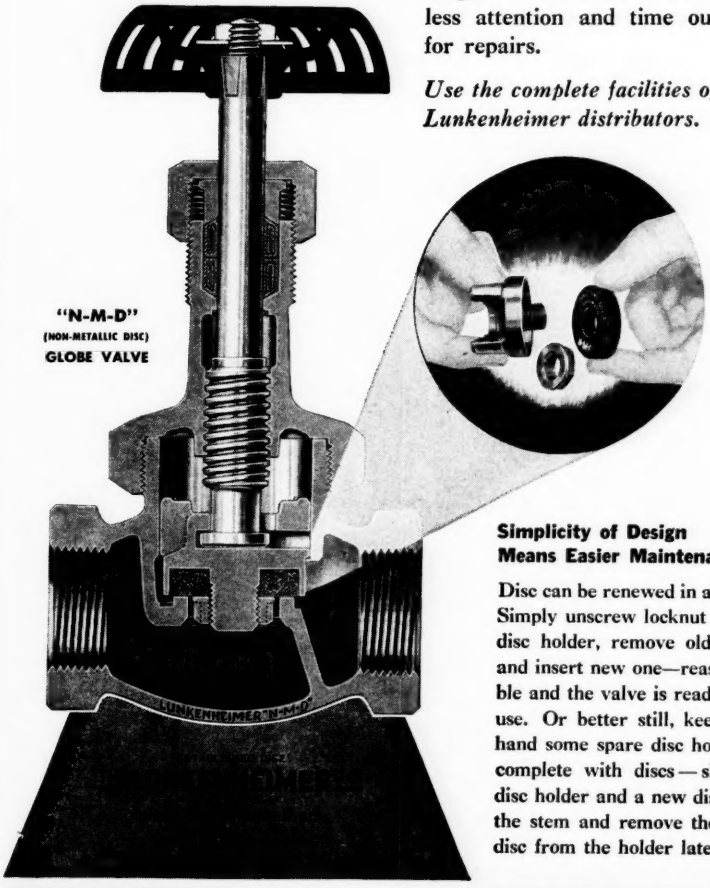

Simplicity of Design Means Easier Maintenance

Disc can be renewed in a jiffy. Simply unscrew locknut from disc holder, remove old disc and insert new one—reassemble and the valve is ready for use. Or better still, keep on hand some spare disc holders complete with discs — slip a disc holder and a new disc on the stem and remove the old disc from the holder later.

LUNKENHEIMER VALVES

8—25C—62

World Gold Standard

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cent of the total known stock of monetary gold. This means that the total supply available in the monetary market changes at a very slow rate—an outstanding characteristic of the yellow metal.

The important question here is: Not what standard would be most stable in Utopia, but, taking human nature as it is and politics as they are, what kind of a monetary standard is likely to prove the most stable in our present work-a-day world? To this question the answer is clearly gold.

If the verdict is in favor of gold for the international monetary standard of the future, the next question is: What kind of a gold standard should we have? To this question my answer must be summarized very briefly.

All three of the principal types of the gold standard, i.e., gold-coin, gold-bullion and gold-exchange standard should be used; every country selecting the type it considers best suited for its own particular purpose.

Each country should choose its own gold unit, a unit that will presumably be approximately the gold equivalent of the paper-money unit prevailing when the gold standard is adopted (or an integral multiple of that unit), so as to hold to a minimum the disturbances resulting from price, wage and fiscal readjustments.

While there should be a high degree of voluntary monetary cooperation among the nations, no attempt should be made to *force* upon any nation either the adoption or the continual maintenance of any particular monetary unit. Nothing is more important in a nation's economic and political life than the value of its monetary unit, the unit in which all debts, public and private, are payable, all taxes are collected, all commodity purchases are effected and all wages paid. The political power tied up in the control of the size of the monetary unit is enormous. It is unfortunate but true that, in time of war or of other great economic crisis, a reduction in the value of the monetary unit through inflation is very frequently resorted to by the governments, in the belief that it is the only effective means of obtaining promptly a large part of the necessary financial sinews. Revolutionary governments, moreover, usually finance themselves chiefly by inflation. Financing by inflation is likely to be the line of least resistance for governments in critical times, and most governments at such times will justify themselves on the plea that the nation's preservation (or perhaps, under their breath, their own) is Heaven's first law.

In plans for international monetary reform it is unrealistic to overlook this fact. A government does not often deliberately *ad hoc* debase its monetary unit; it simply slides off of it and down Inflation Hill, and then recognizes the fact afterwards.

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World Gold Standard

(*Continued from page* 58)

Few if any nations will be willing to contract to give over to any super-state or other international body their sovereign right to control their own monetary system, and if any of them do so contract, the contract will be of little value in time of national emergency.

There should be convertibility on demand of all kinds of non-gold money into gold coin, gold bars, or gold drafts.

The exportation and importation of gold should be free from all trade restrictions and tariffs.

The principal monetary authority in each country should be its central bank of issue on whose controlling board the government should be well represented. Among the central banks there should be maintained a close though largely informal and non-statutory cooperation directed toward the orderly functioning of the international exchanges.

There should be an international bank of some kind through which the central banks can cooperate in collecting international monetary and financial statistics and in effecting international payments, and which, when needed, can take the leadership in measures to enable strong countries to help weak ones in the maintenance of their monetary standards.

A high degree of freedom should be permitted in the international movement of goods and services. High tariff barriers are obstacles to international trade and to the smooth and orderly functioning of any monetary standard.

No kind of monetary standard would have functioned satisfactorily in the kind of a world we have been living in during the last thirty years. We must have many other fundamental reforms in our economic and political system if we are to have a successful monetary system but, as stated previously: the best hope for the monetary systems of the post-war world lies in "a process of monetary evolution starting from the historic gold standard."

First Concrete Ship

(*Continued from page* 32)

Two factors recommended the site: They were (1) Florida's mild climate permitting year-round construction in reinforced concrete without the excessive cost for protection in the North; (2) Geological qualifications of Hooker's Point which lent themselves to construction of relatively inexpensive basins where the hulls could be constructed; the soil comprises a blanket of sand and silt containing a small amount of clay and is sufficiently impervious to water to permit the simulation of dry conditions through use of a wellpoint system.

Work on plant facilities began in June, 1942. The buildings found in most shipyards—Administration building, reinforcing steel storage yard, mold loft, fabricating shop, carpenter ship, electrical ship, machine shop and concrete mixing plant—were erected rapidly. The major job was construction of several basins.

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First Concrete Ship

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The basins were dug adjoining a ship channel. When the project was started, some engineers questioned whether they could be excavated with ordinary crawler shovels, because of the seepage from the channel. A wellpoint system was installed, however, and the shovels bit through dry soil to the full depth.

These basins, as well as a graving basin, were lined with reinforced concrete and then work was started on hulls in each basin. When the hulls were ready to float, an ingenious concrete gate—between the end of the basin and the channel — was floated out so the basins could be flooded.

The gates are regarded as the most unusual part of the entire construction. They are constructed of reinforced concrete and have valves which make it possible to float them.

When the first hulls were launched July 15, 1943, it required seven hours to fill the basin to tide level. After launching, the gate was replaced and the basin pumped dry in about the same length of time. The first experience indicated the soundness of the conception of the entire procedure, engineers pointed out.

The McCloskey ships have an over-all length of 366 feet, with a length of 350 feet between perpen-

(*Continued on page 64*)

First Concrete Ship

(*Continued from page 62*)

diculars; 54-foot beam; displacement, designed, 10,950 tons.

The ship is of the single deck type with a raked steam and modified cruiser stern. It has a fully enclosed poop and a short, partial bridge, all of reinforced concrete.

There are 10 transverse bulkheads, forming seven dry cargo holds, deep tanks for fuel oil, a combined boiler and engine room, forepeak and after-peak. Wing tanks for ballast are provided abreast one of the cargo holds.

Accommodations are provided for 39 persons, in the poop and in wooden deck houses on the poop deck and above the partial bridge.

The seven cargo hatches are 12 feet by 18 feet, served by four pairs of kingposts fitted with wood cargo booms of 5-ton capacity. Two life boats are installed on the bridge and two on the poop, handled by mechanical quadrant-type davits. Life rafts, life floats and other life-saving equipment are provided to meet the requirements of war-time operation. The ships are provided with armament and armor protection as designated by the navy.

The vessel is propelled by a three-cylinder, triple expansion, reciprocating engine. Steam is furnished by two oil-fired, water tube boilers. Pumps and other auxiliaries are steam driven, except the main circulating, main condensate and potable water pump, which are driven by electric motors. There are three kw turbo-generators furnishing current at 120 volts d.c.

The hull is of modified straight-line form with rounded bilges rising forward and aft as a chine. A knuckle is introduced above the load waterline forward to provide flare. Stem and stern frame are built up of steel plates and shapes, well anchored into the concrete structure. The rudder is semi-balanced, or hollow steel plate construction.

Hull and deck fittings, carpentry, joiner work and other items of outfit and equipment are constructed in accordance with usual merchant ship practice, except as modified by current requirements regarding the conservation of critical materials, involving a return to the use of wood wherever possible.

Attachment of fittings to the concrete structure presents an interesting problem. The flexibility of steel construction which permits cutting and welding at will is absent in a concrete structure. All attachments must be planned and located before the concrete is poured, requiring the use of embedded anchor bolts or inserts. A further limitation is imposed by the prohibition of welding to any steel which is in contact with concrete. The use of expansion bolts is confined to the attachment of small, light items, to non-structural and non-watertight concrete members.

Engineers readily point out that had there been sufficient rolled steel, particularly plates, there would have been no justification for a program of construction of reinforced concrete ships. A con-

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First Concrete Ship

(*Continued from page* 64)

crete ship is an emergency measure necessitated by war-time conditions and its economic value has not been proved.

When a new material or combination of materials enters the field of construction, much of the design theory is based upon the opinions of authorities who adapt or even substitute theories devised for older materials which have been tested through use over a considerable period of time.

One might start with the premise that steel has proved to be the best material available for ship construction. To argue that reinforced concrete, having been used successfully as a structural material in buildings, can be similarly used in ship design, is but a partial truth, the engineers say.

Virtually all buildings, and the same is almost as true of most other structures such as dams, bridges and the like, are subjected to static loads only. In a railway bridge, over which a train may pass at the rate of 60 miles an hour, the development of the stresses in the structure progresses about 200 times as fast as the train.

(*Continued on page* 68)

First Concrete Ship

(*Continued from page 66*)

A ship, on the other hand, must be not only structurally sufficient under static conditions, but also capable of resisting those forces developed by the motion of the ship, particularly in rolling. These inertial, or body forces, do not necessarily resemble the dynamic forces in a bridge because, in effect, the stresses arising from a change in motion occur instantaneously at their point of origin, that is, over the entire ship at the same instant.

The effect of this change of motion, with large reversals of stress, therefore, may be more important than that of load, which is to say the dynamic effect is of much importance.

Technically, the design must provide sufficient strength with the greatest resiliency, which in turn through angular change of form requires a material possessing high shearing strength. The design should be based upon strength with resiliency rather than strength with rigidity.

Since concrete is primarily a brittle material, it cannot be trusted for tensile stress. Steel bars or rods must be introduced in those places where engineering knowledge determines that tensile stresses may occur.

Tensile stresses due to pure bending alone, such as those in the deck during hogging action and in the bottom during sagging, or in any part of the ship resisting water pressure, are provided for in a manner not very unlike the way the problem is handled in steel ships. The greatest difficulty is to resist shearing stresses, particularly those in the sides and longitudinal bulkheads approximately about the quarter points.

Georgia Power Plant

(*Continued from page 31*)

remove the gases at the rate of 250,000 cubic feet per minute, thus rushing the gases up and out at a total of 750,000 cubic feet per minute as the three forced-draft fans rush the air in at a total rate of 420,000 cubic feet per minute, an important step in the heat producing process.

The steam drives the turbines. First, however, it is raised to still higher temperature by passing it through a superheater installed within the furnace. The superheated steam—now at 880 degrees Fahrenheit—rushes through pipes into the turbine, where it strikes the blades, or buckets, and revolves the series of wheels that comprise that machine. The high pressure spins the turbine at 3,600 revolutions per minute. The largest wheel in the turbine travels over 13 miles a minute, or 792 miles an hour.

Pressure and temperature of the steam drop as it spends itself against the turbine blades. Sucked out through a condenser, the steam is changed back to water. This is accomplished through channelling the steam against tubes containing cool water from the adjacent Ocmulgee River. There are 23

miles of tubes, or 31,300 square feet of cooling surface in each of the three condensers.

Water required in the condensing process equals three times the daily consumption of a city the size of Atlanta. Six circulating pumps capable of delivering 123,600 gallons a minute, or 177,984,000 gallons each twenty-four hours, pump the water through the condensers. The water enters the plant through a tunnel and after passing through the condenser is immediately returned to the stream.

The next step is actual production of electrical energy. Each of the three turbo-generators is big as a boxcar, but as finely adjusted as a watch. The turbine shaft is connected to the generator shaft and the two revolve together. The electricity is produced on the elementary principle of revolving a wire between two poles of a magnet, except that at Plant Arkwright the magnet is moved instead of the wire.

In each generator, a powerful electric magnet attached to the turbo-generator shaft whirls across a series of wire coils at a speed of 3,600 revolutions per minute. The revolving part weighs 21½ tons. Such rotation at high speed in air would produce much friction and heat, so to lower these, hydrogen gas is sealed in the chamber, thereby lowering the resistance to the whirling wheel.

Electricity flows from the generator at 13,800 volts and is stepped up by transformer to 110,000 volts.

And that, to paraphrase Georgia Power officials, "is how kilowatts are born." They emphasize that neither of their two large plants—Arkwright or Atkinson—is dependent upon rainfall, as are hydroelectric plants.

The Georgia Power Co. acted as its own general engineers and contractors for construction of Plant Arkwright. Main suppliers of equipment included: General Electric Co., Westinghouse Electric & Manufacturing Co., Babcock & Wilcox Co., Combuston Engineering Co., the Elliott Co., Moloney Electric Co., Blaw-Knox Co. and Virginia Bridge Co. (S.A.L.)

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19,500 gal. horiz. 10 ft. x 33 ft. 6 in., riveted, Michigan
20,000 gal. horiz. two compt. 10 ft. 6 in. x 32 ft. ¼ in. in Okla.
8,000 gal. 8 ft. x 22 in. ¼ to 5/16 in., riveted, in Penna.
2—8,000 gal. rail car tanks, with coils, in Ohio
2—5,500 gal. rail car tanks, in Ind.
11,500 gal. horiz. 9 ft. x 24 ft. ¼ in., riveted, in Conn.
11,500 gal. horiz. 8 ft. x 30 ft. 5/16 in., riveted, in Penna.
16,000 gal. horiz. 7/16 in. shell, ½ in. heads, in D. C.
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